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ABSTRACT

With this Career and Technology Studies (CTS) curriculum guide, secondary students in Alberta can do the following: develop skills that can be applied in their daily lives; refine career-planning skills; develop technology-related skills in agriculture; enhance employability skills, especially in foods; and apply and reinforce learning developed in other subject areas. The curriculum is organized in strands and modules. This guide encompassing the agriculture strand contains 33 modules that define what a student is expected to know and be able to do (competencies). The guide is organized in the following parts: (1) program rationale and philosophy, learner expectations, program organization, curriculum and assessment standards, and types of competencies in career and technology studies; (2) strand rationale and philosophy and strand organization for agriculture; (3) planning for instruction for career and technology studies and for agriculture courses; (4) module curriculum and assessment standards for introductory level agriculture competencies; (5) module curriculum and assessment standards for intermediate level agriculture competencies; (6) module curriculum and assessment standards for advanced level agriculture competencies; (7) assessment tools; (8) linkages and transitions; (9) learning resource guide; and (10) sample student learning guides. Modules cover the following broad topics: production, consumer products/services, landscape/turf management, floral design, marketing, agricultural technology, resource management, animal husbandry, field crops, livestock/poultry, agrifoods, equine, protected structures, soils management, pest management, nursery/greenhouse crops, biotechnology, water management, and sustainable agriculture. (KC)

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CAREER & TECHNOLOGY STUDIES

AGRICULTURE

GUIDE TO STANDARDS AND IMPLEMENTATION

1997

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Counsellors	✓
General Audience	
Parents	
Students	
Teachers	✓

Program/Level: Career and Technology Studies/Secondary

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This document supersedes all previous versions of the *Career & Technology Studies Guide to Standards and Implementation*.

This publication is a support document. The advice and direction offered is suggestive except where it duplicates the Program of Studies. The Program of Studies—a prescriptive description of the expectations of student learning, focusing on what students are expected to know and be able to do—is issued under the authority of the Minister of Education pursuant to section 25(1) of the *School Act*, Statutes of Alberta, 1988, Chapter S-3.1 as amended, and is required for implementation. **Within this document, the Program of Studies is shaded so that the reader may readily identify all prescriptive statements or segments.**

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CAREER AND TECHNOLOGY STUDIES

A. PROGRAM RATIONALE AND PHILOSOPHY

Through Career and Technology Studies (CTS), secondary education in Alberta is responding to the many challenges of modern society, helping young people develop daily living skills and nurturing a flexible, well-qualified work force.

In Canada's information society, characterized by rapid change in the social and economic environment, students must be confident in their ability to respond to change and successfully meet the challenges they face in their own personal and work lives. In particular, they make decisions about what they will do when they finish high school. Many students will enter the work force, others will continue their education. All students face the challenges of growing independence and responsibility, and of entering post-secondary programs and/or the highly competitive workplace.

Secondary schools also face challenges. They must deliver, on a consistent basis, high quality, cost-effective programs that students, parents and the community find credible and relevant.

CTS helps schools and students meet these challenges. Schools can respond more efficiently and effectively to student and community needs and expectations by taking advantage of the opportunities in the CTS curriculum to design courses and access school, community and distance learning resources. Students can develop the confidence they need as they move into adult roles by assuming increased responsibility for their learning; cultivating their individual talents, interests and abilities; and by defining and acting on their goals.

As an important component of education in Alberta secondary schools, CTS promotes student achievement by setting clear expectations and recognizing student success. Students in CTS develop competencies—the knowledge, skills and attitudes they are expected to demonstrate, that is, what they know and what they are able to do.

Acquired competencies can be applied now and in the future as students make a smooth transition into adult roles in the family, community, workplace and/or further education. To facilitate this transition, clearly stated expectations and standards have been defined in cooperation with teachers, business and industry representatives and post-secondary educators.

CTS offers all students important learning opportunities. Regardless of the particular area of study chosen, *students* in CTS *will*:

- develop skills that can be applied in their daily lives, now and in the future
- refine career-planning skills
- develop technology-related skills
- enhance employability skills
- apply and reinforce learnings developed in other subject areas.

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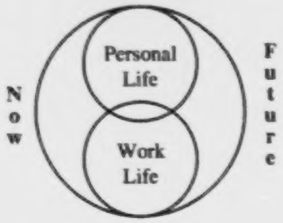
In CTS, students build skills they can apply in their everyday lives. For example, in the CTS program, particularly at the introductory levels, students have the opportunity to improve their ability to make sound consumer decisions and to appreciate environmental and safety precautions.

CAREERS



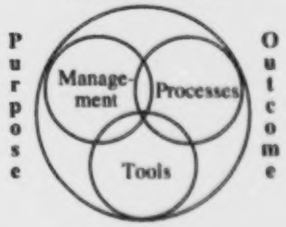
A career encompasses more than activities just related to a person's job or occupation; it involves one's personal life in both local and global contexts; e.g., as a family member, a friend, a community volunteer, a citizen of the world.

The integration of careers throughout the CTS program helps students to make effective career decisions and to target their efforts. CTS students will have the opportunity to expand their knowledge about careers, occupations and job opportunities, as well as the education and/or training requirements involved. Also, students come to recognize the need for lifelong learning.

Students in CTS have the opportunity to use and apply technology and systems effectively and efficiently. This involves:

- a decision regarding which processes and procedures best suit the task at hand
- the appropriate selection and skilled use of the tools and/or resources available
- an assessment of and management of the impact the use of the technology may have on themselves, on others and on the environment.

TECHNOLOGY



Integrated throughout CTS are employability skills, those basic competencies that help students develop their personal management and social skills. Personal management skills are improved as students take increased responsibility for their learning, design innovative solutions to problems and challenges, and manage resources effectively and efficiently. Social skills improve through learning experiences that require students to work effectively with others, demonstrate teamwork and leadership, and maintain high standards in safety and accountability.

As well as honing employability skills, CTS reinforces and enhances learnings developed in core and other complementary courses. The curriculum emphasizes, as appropriate, the effective application of communication and numeracy skills.

In addition to the common outcomes described above, students focusing on a particular area of study will develop career-specific competencies that support entry into the workplace and/or related post-secondary programs. Career-specific competencies can involve understanding and applying appropriate terminology, processes and technologies related to a specific career, occupation or job.

GENERAL LEARNER EXPECTATIONS

General learner expectations describe the basic competencies integrated throughout the CTS program.

Within an applied context relevant to personal goals, aptitudes and abilities; *the student* in CTS *will*:

- demonstrate the basic knowledge, skills and attitudes necessary for achievement and fulfillment in personal life
- develop an action plan that relates personal interests, abilities and aptitudes to career opportunities and requirements
- use technology effectively to link and apply appropriate tools, management and processes to produce a desired outcome
- develop basic competencies (employability skills), by:
  - selecting relevant, goal-related activities, ranking them in order of importance, allocating necessary time, and preparing and following schedules (managing learning)
  - linking theory and practice, using resources, tools, technology and processes responsibly and efficiently (managing resources)
  - applying effective and innovative decision-making and problem-solving strategies in the design, production, marketing and consumption of goods and services (problem solving and innovation)
  - demonstrating appropriate written and verbal skills, such as composition, summarization and presentation (communicating effectively)
  - participating as a team member by working cooperatively with others and contributing to the group with ideas, suggestions and effort (working with others)
  - maintaining high standards of ethics, diligence, attendance and punctuality, following safe procedures consistently, and recognizing and eliminating potential hazards (demonstrating responsibility).

PROGRAM ORGANIZATION

CURRICULUM STRUCTURE

Career and Technology Studies is organized into **strands** and **modules**.

Strands in CTS define competencies that help students:

- build daily living skills
- investigate career options
- use technology (managing, processes, tools) effectively and efficiently
- prepare for entry into the workplace and/or related post-secondary programs.

In general, strands relate to selected industry sectors offering positive occupational opportunities for students. Some occupational opportunities require further education after high school, and some allow direct entry into the workplace. Industry sectors encompass goods-producing industries, such as agriculture, manufacturing and construction; and service-producing industries, such as business, health, finance and insurance.

Modules are the building blocks for each strand. They define what a student is expected to know and be able to do (exit-level *competencies*). Modules also specify prerequisites. Recommendations for module parameters, such as instructional qualifications, facilities and equipment can be found in the guides to implementation.

The competencies a student must demonstrate to achieve success in a module are defined through the *module learner expectations*. Senior high school students who can demonstrate the module learner expectations; i.e., who have the designated competencies, will qualify for one credit toward their high school diploma.

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Specific learner expectations provide a more detailed framework for instruction. Within the context of module learner expectations, the specific learner expectations further define the knowledge, skills and attitudes the student should acquire.

The following chart shows the 22 strands that comprise the CTS program and the number of modules available in each strand.

Strand	No. of Modules
1. Agriculture	33
2. Career Transitions	28
3. Communication Technology	33
4. Community Health	31
5. Construction Technologies	46
6. Cosmetology	58
7. Design Studies	31
8. Electro-Technologies	37
9. Energy and Mines	26
10. Enterprise and Innovation	8
11. Fabrication Studies	41
12. Fashion Studies	29
13. Financial Management	14
14. Foods	37
15. Forestry	21
16. Information Processing	48
17. Legal Studies	13
18. Logistics	12
19. Management and Marketing	19
20. Mechanics	54
21. Tourism Studies	24
22. Wildlife	17

LEVELS OF ACHIEVEMENT

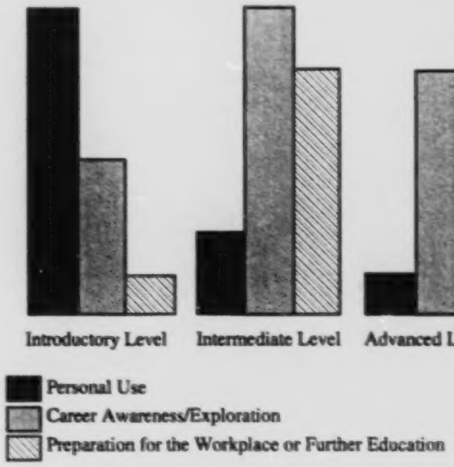
Modules are organized into three levels of achievement: **introductory**, **intermediate** and **advanced**. As students progress through the levels, they will be expected to meet higher standards and demonstrate an increased degree of competence, in both the general learner expectations and the module learner expectations.

Introductory level modules help students build daily living skills and form the basis for further learning. Introductory modules are for students who have no previous experience in the strand.

Intermediate level modules build on the competencies developed at the introductory level. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Advanced level modules refine expertise and help prepare students for entry into the workplace or a related post-secondary program.

The graph below illustrates the relative emphasis on the aspects of career planning at each of the levels.



CURRICULUM AND ASSESSMENT STANDARDS

Curriculum standards in CTS define what students must know and be able to do. Curriculum standards are expressed through general learner expectations for CTS, and through module and specific learner expectations for each strand.

Assessment standards define how student performance is to be judged. In CTS, each assessment standard defines the conditions and criteria to be used for assessing the competencies of each module learner expectation. To receive credit for a module, students must demonstrate competency at the level specified by the conditions and criteria defined for each module learner expectation.

Students throughout the province receive a fair and reliable assessment as they use the standards to guide their efforts, thus ensuring they participate more effectively and successfully in the learning and assessment process. Standards at advanced levels are, as much as possible, linked to workplace and post-secondary entry-level requirements.

TYPES OF COMPETENCIES

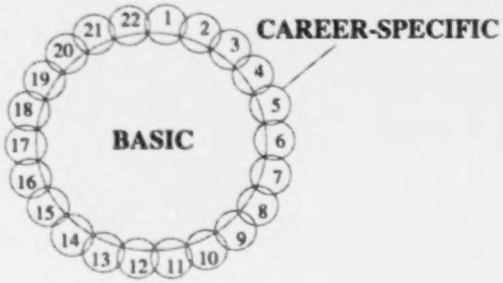
Two types of competencies are defined within the CTS program: basic and career-specific.

Basic competencies are generic to any career area and are developed within each module. Basic competencies include:

- personal management; e.g., managing learning, being innovative, ethics, managing resources
- social; e.g., communication, teamwork, leadership and service, demonstrating responsibility (safety and accountability).

Career-specific competencies relate to a particular strand. These competencies build daily living skills at the introductory levels and support the smooth transition to the workplace and/or post-secondary programs at the intermediate and advanced levels.

The model below shows the relationship of the two types of competencies within the 22 strands of the CTS program.



BASIC COMPETENCIES REFERENCE GUIDE

The chart below outlines basic competencies that students endeavour to develop and enhance in each of the CTS strands and modules. Students' basic competencies should be assessed through observations involving the student, teacher(s), peers and others as they complete the requirements for each module. In general, there is a progression of task complexity and student initiative as outlined in the Developmental Framework★. **As students progress through Stages 1, 2, 3 and 4 of this reference guide, they build on the competencies gained in earlier stages**. Students leaving high school should set themselves a goal of being able to demonstrate Stage 3 performance.

Suggested strategies for classroom use include:

- having students rate themselves and each other
- using in reflective conversation between teacher and student
- highlighting areas of strength
- tracking growth in various CTS strands
- highlighting areas upon which to focus
- maintaining a student portfolio.

Stage 1— *The student:*	**Stage 2—** *The student:*	**Stage 3—** *The student:*	**Stage 4—** *The student:*
Managing Learning			
☐ comes to class prepared for learning	☐ →	☐ →	☐ →
☐ follows basic instructions, as directed	☐ follows instructions, with limited direction	☐ follows detailed instructions on an independent basis	☐ →
	☐ sets goals and establishes steps to achieve them, with direction	☐ sets clear goals and establishes steps to achieve them	☐ demonstrates self-direction in learning, goal setting and goal achievement
☐ acquires specialized knowledge, skills and attitudes	☐ applies specialized knowledge, skills and attitudes in practical situations	☐ transfers and applies specialized knowledge, skills and attitudes in a variety of situations	☐ transfers and applies learning in new situations; demonstrates commitment to lifelong learning
☐ identifies criteria for evaluating choices and making decisions	☐ identifies and applies a range of effective strategies for solving problems and making decisions	☐ uses a range of critical thinking skills to evaluate situations, solve problems and make decisions	☐ thinks critically and acts logically to evaluate situations, solve problems and make decisions
☐ uses a variety of learning strategies	☐ explores and uses a variety of learning strategies, with limited direction	☐ selects and uses effective learning strategies	☐ →
		☐ cooperates with others in the effective use of learning strategies	☐ provides leadership in the effective use of learning strategies
Managing Resources			
☐ adheres to established timelines; uses time/schedules/planners effectively	☐ creates and adheres to timelines, with limited direction; uses time/schedules/planners effectively	☐ creates and adheres to detailed timelines on an independent basis; prioritizes task; uses time/schedules/planners effectively	☐ creates and adheres to detailed timelines; uses time/schedules/planners effectively; prioritizes tasks on a consistent basis
☐ uses information (material and human resources), as directed	☐ accesses and uses a range of relevant information (material and human resources), with limited direction	☐ accesses a range of information (material and human resources), and recognizes when additional resources are required	☐ uses a wide range of information (material and human resources) in order to support and enhance the basic requirement
☐ uses technology (facilities, equipment, supplies), as directed, to perform a task or provide a service	☐ uses technology (facilities, equipment, supplies), as appropriate, to perform a task or provide a service, with minimal assistance and supervision	☐ selects and uses appropriate technology (facilities, equipment, supplies) to perform a task or provide a service on an independent basis	☐ recognizes the monetary and intrinsic value of managing technology (facilities, equipment, supplies)
☐ maintains, stores and/or disposes of equipment and materials, as directed	☐ maintains, stores and/or disposes of equipment and materials, with limited assistance	☐ maintains, stores and/or disposes of equipment and materials on an independent basis	☐ demonstrates effective techniques for managing facilities, equipment and supplies
Problem Solving and Innovation			
☐ participates in problem solving as a process ☐ learns a range of problem-solving skills and approaches	☐ identifies the problem and selects an appropriate problem-solving approach, responding appropriately to specified goals and constraints	☐ thinks critically and acts logically in the context of problem solving	☐ identifies and resolves problems efficiently and effectively
☐ practices problem-solving skills by responding appropriately to a clearly defined problem, specified goals and constraints, by: – generating alternatives – evaluating alternatives – selecting appropriate alternative(s) – taking action	☐ applies problem-solving skills to a directed or a self-directed activity, by: – generating alternatives – evaluating alternatives – selecting appropriate alternative(s) – taking action	☐ transfers problem-solving skills to real-life situations, by generating new possibilities ☐ prepares implementation plans ☐ recognizes risks	☐ identifies and suggests new ideas to get the job done creatively, by: – combining ideas or information in new ways – making connections among seemingly unrelated ideas – seeking out opportunities in an active manner

Stage 1— *The* student:*	**Stage 2—** *The student:*	**Stage 3—** *The student:*	**Stage 4—** *The student:*
Communicating Effectively			
☐ uses communication skills; e.g., reading, writing, illustrating, speaking	☐ communicates thoughts, feelings and ideas to justify or challenge a position, using written, oral and/or visual means	☐ prepares and effectively presents accurate, concise, written, visual and/or oral reports providing reasoned arguments	☐ negotiates effectively, by working toward an agreement that may involve exchanging specific resources or resolving divergent interests
☐ uses language in appropriate context	☐ uses technical language appropriately	☐ encourages, persuades, convinces or otherwise motivates individuals	☐ negotiates and works toward a consensus
☐ listens to understand and learn	☐ listens and responds to understand and learn	☐ listens and responds to understand, learn and teach	☐ listens and responds to understand, learn, teach and evaluate
☐ demonstrates positive interpersonal skills in selected contexts	☐ demonstrates positive interpersonal skills in many contexts	☐ demonstrates positive interpersonal skills in most contexts	☐ promotes positive interpersonal skills among others
Working with Others			
☐ fulfills responsibility in a group project	☐ ——►——►	☐ seeks a team approach, as appropriate, based on group needs and benefits; e.g., idea potential, variety of strengths, sharing of workload	☐ leads, where appropriate, mobilizing the group for high performance
☐ works collaboratively in structured situations with peer members	☐ cooperates to achieve group results	☐ works in a team or group: – encourages and supports team members – helps others in a positive manner – provides leadership/followership as required – negotiates and works toward consensus as required	☐ understands and works within the context of the group
☐ acknowledges the opinions and contributions of others in the group	☐ maintains a balance between speaking, listening and responding in group discussions ☐ respects the feelings and views of others		☐ prepares, validates and implements plans that reveal new possibilities
Demonstrating Responsibility			
Attendance			
☐ demonstrates responsibility in attendance, punctuality and task completion	☐ ——►——►	☐ ——►——►	☐ ——►——►
Safety			
☐ follows personal and environmental health and safety procedures	☐ recognizes and follows personal and environmental health and safety procedures	☐ establishes and follows personal and environmental health and safety procedures	☐ transfers and applies personal and environmental health and safety procedures to a variety of environments and situations
☐ identifies immediate hazards and their impact on self, others and the environment	☐ identifies immediate and potential hazards and their impact on self, others and the environment	☐ ——►——►	☐ ——►——►
☐ follows appropriate/emergency response procedures	☐ ——►——►	☐ ——►——►	☐ ——►——►
			☐ demonstrates accountability for actions taken to address immediate and potential hazards
Ethics			
☐ makes personal judgements about whether or not certain behaviours/actions are right or wrong	☐ assesses how personal judgements affect other peer members and/or family; e.g., home and school	☐ assesses the implications of personal/group actions within the broader community; e.g., workplace	☐ analyzes the implications of personal/group actions within the global context
			☐ states and defends a personal code of ethics as required

***Developmental Framework**			
- *Simple task* - *Structured environment* - *Directed learning*	- *Task with limited variables* - *Less structured environment* - *Limited direction*	- *Task with multiple variables* - *Flexible environment* - *Self-directed learning, seeking assistance as required*	- *Complex task* - *Open environment* - *Self-directed/self-motivated*

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AGRICULTURE

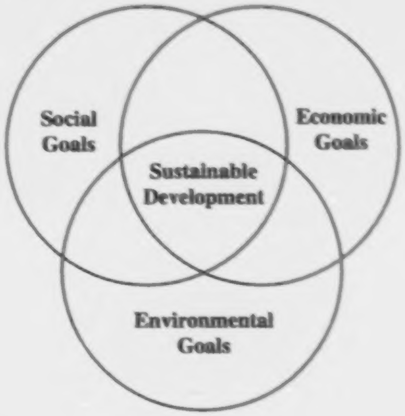
B. STRAND RATIONALE AND PHILOSOPHY

Agriculture is a diverse endeavour involving both rural and urban communities. It affects the quality of life of all Albertans. Agriculture encompasses not only the direct production of primary goods, but also the processing and service industries. It is the second most important area of economic activity in Alberta.★

Growth and development opportunities exist for agriculture products and technologies. The continued strength of Alberta's agriculture industries in domestic and international markets can be ensured through practices that add value to agriculture commodities, and by diversifying products and services to meet consumer needs.

Agriculture involves using our most basic resources: soil, water, plants, animals and people. Concern for the environment provides continuing incentive for new technologies and methods of managing interactions among these resources. Industry practices must ensure the sustainable use of natural resources.

Agriculture, a strand in Career and Technology Studies, provides a comprehensive view of agriculture in Alberta. It encompasses plant and animal production, interior and exterior plantscape, animal husbandry, the agrifood industry, market research and development, and environmental management. Students will develop first-hand knowledge of practices within Alberta's agriculture industries and will apply this knowledge in producing agriculture products and providing related services.



Students in Agriculture will develop the knowledge, skills, attitudes, motivation and commitment to work individually and collectively, as private citizens and members of the work force, toward the conservation and responsible use of water, land, air, forests and wildlife. Within the philosophy of Career and Technology Studies, *students* in Agriculture *will*:

★ *Agriculture in Alberta*, Edmonton, AB: Alberta Agriculture, Food and Rural Development, 1993.

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- develop greater awareness of the economic, environmental and social significance of agriculture in Alberta and the rest of the world, and develop awareness of factors affecting industry decisions
- describe the characteristics of Alberta's agriculture and horticulture industries, and identify resulting products and services
- describe technologies and research programs that support sustainable agriculture systems and that enhance the development of a range of products and services
- translate sustainable development and conservation goals into viable plans for developing and marketing agriculture and horticulture products and services
- develop competencies and behaviours that have broad application to environmental career paths, and specific application to careers within Alberta's agriculture and horticulture industries.

STRAND ORGANIZATION

DEVELOPMENT MODEL

The development model depicts three dimensions that provide a basis for selecting and organizing content within the Agriculture strand.

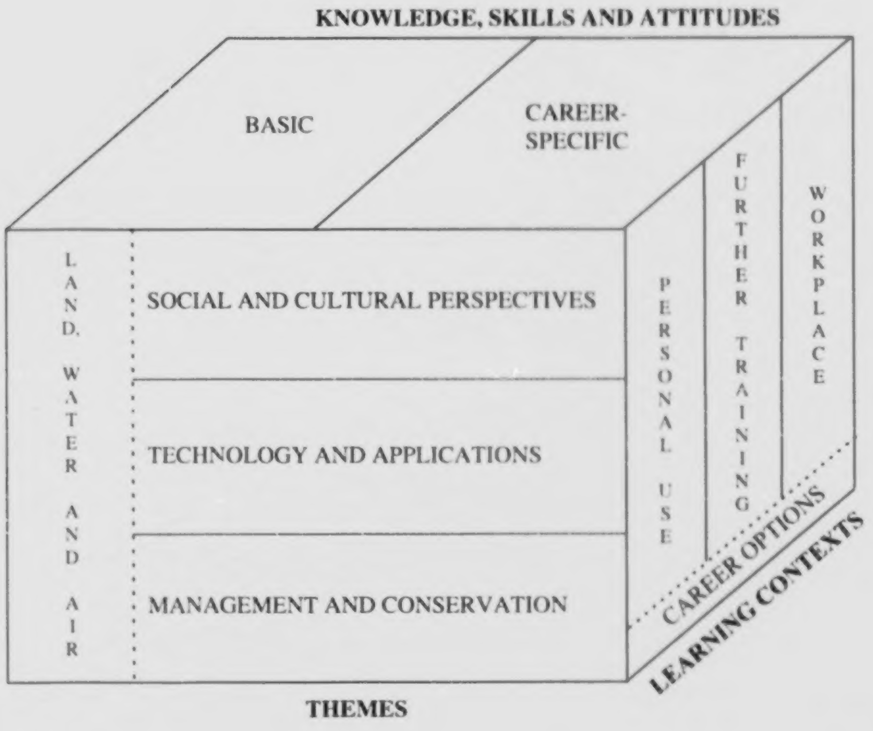
- The KNOWLEDGE, SKILLS AND ATTITUDES, represented on the upper face of the model, provide structure for the course and focus attention on learning goals common to all CTS courses.

- The LEARNING CONTEXTS, represented on the right face of the model, foster the development of knowledge and behaviours that enable students to meet the demands of daily living, further training and the workplace.

- The THEMES provide situational and concrete learning experiences that support the development of knowledge, skills and attitudes relevant to each of the learning contexts. Each theme focuses attention on a different aspect of sustainable agriculture development. Blended together, the themes enable students to understand how it is possible to fulfill social, cultural, aesthetic and economic goals through resource development, while embracing a conservation ethic so as to maintain essential ecological processes, genetic diversity and an adequate resource base for future generations.

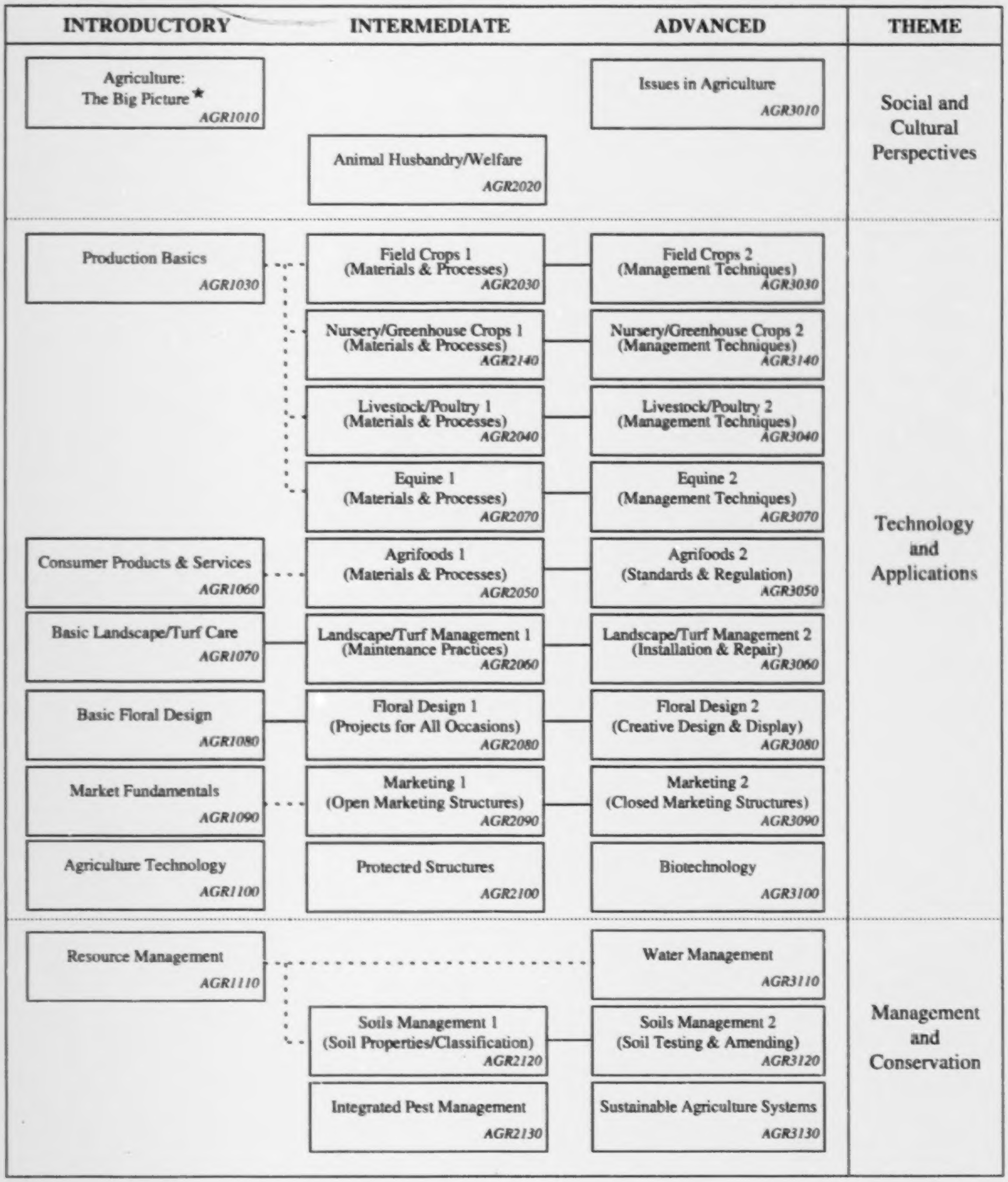
LEVELS

Agriculture, like other Career and Technology Studies curricula, is organized into three levels of learning: introductory, intermediate and advanced.


KNOWLEDGE, SKILLS AND ATTITUDES
BASIC
CAREER-SPECIFIC
LAND, WATER AND AIR
SOCIAL AND CULTURAL PERSPECTIVES
TECHNOLOGY AND APPLICATIONS
MANAGEMENT AND CONSERVATION
PERSONAL USE
FURTHER TRAINING
WORKPLACE
CAREER OPTIONS
LEARNING CONTEXTS
THEMES

Introductory modules enable students to develop an understanding of the significance of agriculture to Albertans. Students will examine sample areas of production, processing and marketing, and research technologies that support sustainable agriculture practice.

Intermediate and advanced level modules develop more specialized knowledge and skills within an area of agriculture production, marketing or service. Students examine the role of agriculture in a global economy, and consider influences of emerging technologies, international trade and environmental sustainability on industry practice and society in general.



INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME
Agriculture: The Big Picture ★ *AGR1010*		Issues in Agriculture *AGR3010*	Social and Cultural Perspectives
	Animal Husbandry/Welfare *AGR2020*		
Production Basics *AGR1030*	Field Crops 1 (Materials & Processes) *AGR2030*	Field Crops 2 (Management Techniques) *AGR3030*	Technology and Applications
	Nursery/Greenhouse Crops 1 (Materials & Processes) *AGR2140*	Nursery/Greenhouse Crops 2 (Management Techniques) *AGR3140*	
	Livestock/Poultry 1 (Materials & Processes) *AGR2040*	Livestock/Poultry 2 (Management Techniques) *AGR3040*	
	Equine 1 (Materials & Processes) *AGR2070*	Equine 2 (Management Techniques) *AGR3070*	
Consumer Products & Services *AGR1060*	Agrifoods 1 (Materials & Processes) *AGR2050*	Agrifoods 2 (Standards & Regulation) *AGR3050*	
Basic Landscape/Turf Care *AGR1070*	Landscape/Turf Management 1 (Maintenance Practices) *AGR2060*	Landscape/Turf Management 2 (Installation & Repair) *AGR3060*	
Basic Floral Design *AGR1080*	Floral Design 1 (Projects for All Occasions) *AGR2080*	Floral Design 2 (Creative Design & Display) *AGR3080*	
Market Fundamentals *AGR1090*	Marketing 1 (Open Marketing Structures) *AGR2090*	Marketing 2 (Closed Marketing Structures) *AGR3090*	
Agriculture Technology *AGR1100*	Protected Structures *AGR2100*	Biotechnology *AGR3100*	
Resource Management *AGR1110*		Water Management *AGR3110*	Management and Conservation
	Soils Management 1 (Soil Properties/Classification) *AGR2120*	Soils Management 2 (Soil Testing & Amending) *AGR3120*	
	Integrated Pest Management *AGR2130*	Sustainable Agriculture Systems *AGR3130*	

——— Prerequisite . . . . Recommended sequence

★ Module provides a strong foundation for further learning in this strand.

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MODULE DESCRIPTIONS

Module AGR1010: Agriculture: The Big Picture
Students demonstrate knowledge of the diversity and significance of agriculture, and they identify career opportunities within the industry.

Module AGR1030: Production Basics
Students demonstrate the basic steps involved in planting, growing and harvesting a plant commodity; or in raising, growing and finishing an animal commodity, and they identify related career opportunities.

Module AGR1060: Consumer Products & Services
Students demonstrate the basic steps involved in processing (adding value to) an agriculture commodity and/or in providing related services, and they identify career opportunities in agriculture processing.

Module AGR1070: Basic Landscape/Turf Care
Students demonstrate knowledge of the techniques used to perform basic landscape and turf care services, focusing attention on plant identification, equipment and supplies and basic maintenance tasks; and they identify related career opportunities.

Module AGR1080: Basic Floral Design
Students demonstrate knowledge of the techniques used to construct basic floral designs and arrangements, focusing attention on plant and flower identification, care and handling of fresh cut flowers and foliage, and simple fresh/dried/artificial arrangements; and they identify related career opportunities.

Module AGR1090: Market Fundamentals
Students explain the basic principles involved in marketing a plant or animal product or service, and they identify related career opportunities.

Module AGR1100: Agriculture Technology
Students describe applications of science and technology within an agriculture or horticulture industry.

Module AGR1110: Resource Management
Students describe the practices used to manage water, soil and land use; and they present the results of research on one or more related issues in agriculture.

Module AGR2020: Animal Husbandry/ Welfare
Students apply the principles of animal science and health technology in providing care for a domestic animal.

Module AGR2030: Field Crops 1 (Materials & Processes)
Students apply knowledge of materials and processes in growing a field crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment and practical production tasks; and they identify related career opportunities. Potential areas of specialization include the production of cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, fruits, medicinal plants and exotic plants.

Module AGR2040: Livestock/Poultry 1 (Materials & Processes)
Students apply knowledge of materials and processes in raising livestock, poultry or other animal commodities, focusing attention on anatomy and identification, rations and feeding, housing, animal handling and restraint, animal health and welfare, and care for the young; and they identify related career opportunities. Potential areas of specialization include the production of beef, dairy, poultry, swine, sheep, game, exotics and bees and/or the study of aquaculture.

Module AGR2050: Agrifoods 1 (Materials & Processes)
Students demonstrate knowledge of materials and processes used in producing an agrifood product or in providing a related service, focusing attention on industry inputs, and processing technologies and practices; and they identify related career opportunities. Potential areas of investigation include dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruits/vegetables and honey.

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Module AGR2060: Landscape/Turf Management 1 (Maintenance Practices)

Students demonstrate the techniques used to provide landscape and turf maintenance services, focusing attention on plant identification, equipment maintenance, effective landscape practices, cost analysis and pricing. Potential areas of specialization include home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds and roadside landscapes.

Module AGR2070: Equine 1 (Materials & Processes)

Students demonstrate practical skills and approved practices in providing for the daily care of a horse, focusing attention on the origin and history of horses, anatomy and conformation, types and breeds, handling and feeding practices, and basic health care; and they identify related career opportunities.

Module AGR2080: Floral Design 1 (Projects for All Occasions)

Students demonstrate knowledge of the practices involved in providing floral design and interior plantscape services, focusing attention on plant and flower identification, elements and principles of design, floral projects for all occasions, interior plant care and marketing practices.

Module AGR2090: Marketing 1 (Open Marketing Structures)

Students apply knowledge of general marketing principles within the context of an agriculture or horticulture industry, focusing attention on materials and services offered to the consumer through open (free enterprise) marketing structures and marketing techniques; and they identify related career opportunities.

Module AGR2100: Protected Structures

Students identify essential components of a controlled growing/living environment and demonstrate the techniques used to manage the growing/living environment within a protected enclosure.

Module AGR2120: Soils Management 1 (Soil Properties/Classification)

Students examine soil formation and classification, conduct tests to determine the physical and chemical properties of soils, and they explain the impact of soil properties on productivity.

Module AGR2130: Integrated Pest Management

Students apply knowledge of biological, cultural and chemical pest-control measures within the context of an agriculture, horticulture or forest industry.

Module AGR2140: Nursery/Greenhouse Crops 1 (Materials & Processes)

Students apply knowledge of materials and processes in growing a nursery or greenhouse crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment, and practical production tasks; and they identify related career opportunities.

Module AGR3010: Issues in Agriculture

Students analyze a range of issues relevant to agriculture and food production, and they develop strategies for dealing with agriculture issues within a global context.

Module AGR3030: Field Crops 2 (Management Techniques)

Students demonstrate the techniques used to produce a field crop, focusing attention on industry trends, enterprise selection, genetics and reproduction, and production skills. Potential areas of specialization include the production of cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, fruits, medicinal plants and exotic plants.

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Module AGR3040: Livestock/Poultry 2 (Management Techniques)
Students demonstrate the techniques used to manage production of livestock, poultry or other animal commodities, focusing attention on industry trends and opportunities, genetics and reproduction, rations and feeding, housing, animal handling and restraint, animal health and welfare, breeding operations and care for the young. Potential areas of specialization include the production of beef, dairy, poultry, swine, sheep, game, exotics and bees and/or the study of aquaculture.

Module AGR3050: Agrifoods 2 (Standards & Regulation)
Students demonstrate knowledge of the techniques used to manage the development of an agrifood product or related service, focusing attention on government regulation and control, economic principles, product quality and safety, environmental impact and industry trends. Potential areas of investigation include dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruits/vegetables and honey.

Module AGR3060: Landscape/Turf Management 2 (Installation & Repair)
Students demonstrate the techniques used to provide landscape and turf management services, focusing attention on plant identification, effective maintenance practices, diagnosis and correction of problems, installation of specialty items, cost analysis and seasonal estimates. Potential areas of specialization include home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds and roadside landscapes.

Module AGR3070: Equine 2 (Management Techniques)
Students demonstrate practical skills and approved practices in providing for the daily care of a horse, focusing attention on the use of physical facilities, procedures for stall cleaning and bedding a horse, guidelines for turnout and shelter, reproductive fundamentals and techniques, and basic horsemanship.

Module AGR3080: Floral Design 2 (Creative Design & Display)
Students demonstrate knowledge of the practices involved in providing creative floral design services, focusing attention on plant and flower identification, more advanced design techniques, floral services for special occasions and promotional displays of floral services offered.

Module AGR3090: Marketing 2 (Closed Marketing Structures)
Students explain specialized applications of marketing within closed (supply managed) marketing structures, focusing attention on regulatory agencies/policies that influence the supply of a commodity, product or service.

Module AGR3100: Biotechnology
Students present the results of research on applications of biotechnology in agriculture and food production.

Module AGR3110: Water Management
Students explain principles of water management and establish appropriate water management practices for an agriculture or horticulture enterprise.

Module AGR3120: Soils Management 2 (Soil Testing & Amending)
Students demonstrate knowledge of appropriate soil testing and amending techniques, and they interpret soil survey maps and reports.

Module AGR3130: Sustainable Agriculture Systems
Students examine the impact of a range of agriculture practices on the environment, and they propose strategies for ensuring the sustainable use of natural resources.

Module AGR3140: Nursery/Greenhouse Crops 2 (Management Techniques)
Students demonstrate techniques used to produce a nursery or greenhouse crop, focusing attention on enterprise selection, plant identification, genetics and reproduction, production skills and venture analysis.

SECTION C: PLANNING FOR INSTRUCTION

CTS provides increased opportunity for junior and senior high schools to design courses based on the needs and interests of their students and the circumstances within the school and community. Some strands may be appropriately introduced at the junior high school level. Other strands are more appropriately introduced at the senior high school level or to Grade 9 students. Refer to this section for recommendations regarding the Agriculture strand, or the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* for a summary of the recommended grade levels for each strand.

PLANNING FOR CTS

Defining Courses

Schools determine which strands and modules will be offered in a particular school, and will combine modules into courses.

Each module was designed for approximately 25 hours of instruction. However, this time frame is only a guideline to facilitate planning. The CTS curricula are competency based, and the student may take more or less time to gain the designated competencies within each module.

A course will usually consist of modules primarily from the same strand but, where appropriate, may include modules from other CTS strands. Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (Appendix 4) for more information on course names and course codes.

Module selection and sequencing should consider:

- prerequisite(s)
- supporting module(s) (other CTS modules that may enhance the learning opportunity if offered with the module)
- module parameters
  - instructional qualifications, if specialized
  - equipment and facility requirements, if specialized.

The module parameters are defined for each module in Sections D, E and F of this Guide.

Degree of Flexibility

The CTS program, while designed using the modular structure to facilitate flexible timetabling and instructional delivery, does not mandate the degree of flexibility a school or teacher will offer. The teacher and school will determine the degree of flexibility available to the student. Within the instructional plan established by the school, the student may:

- be given the opportunity to progress at a rate that is personally challenging
- have increased opportunity to select modules that develop competencies he or she finds most relevant.

Integrating Basic Competencies

The basic competencies relate to managing learning and resources, problem solving and innovation, communicating effectively, working with others and demonstrating responsibility are developed throughout the CTS program, and are within each module.

Assessment of student achievement on the basic competencies is integrated throughout the other module learner expectations. Refer to Section G (Assessment Tools) of this Guide for the description of student behaviours expected at each of the four developmental stages defined for the basic competencies.

Assessment of basic competencies could include input and reflection involving the student, teacher(s), peers and others. Description of the observed behaviour could be provided through a competency profile for the module. Positive, ongoing interaction between the student and teacher will support motivation for student growth and improvement.

Assessing Student Achievement

Assessing student achievement is a process of gathering information by way of observations of process, product and student interaction.

Where appropriate, assessment tools have been defined to assist the teacher and student in the assessment. Refer to Section G (Assessment Tools) of this Guide for copies of the various tools (worksheets, checklists, sample questions, etc.).

A suggested emphasis for each module learner expectation has also been established. The suggested emphasis provides a guideline to help teachers determine time allocation and/or the appropriate emphasis for each MLE and student grade.

Recognizing Student Achievement

At the high school level, successful demonstration of the exit-level competencies in a module qualifies the student for one credit. Refer to Section A of this Guide for more detailed information about how curriculum and assessment standards are defined in CTS. Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (Appendix 12) for more information on how student achievement can be recognized and reported at the school and provincial levels.

Portfolios

When planning for instruction and assessment, consider a portfolio as an excellent tool to provide evidence of a student's effort, progress and achievement. Portfolios will aid students in identifying skills and interest. They also provide the receiving teacher, employer and/or post-secondary institution proof of a student's accomplishments. The make-up and evaluation of the portfolio should be a collaborative agreement between the student and teacher.

Resources

A comprehensive resource base, including print, software and audio-visual, has been identified to support CTS strands. It is intended that these resources form the basis of a resource centre, encouraging teachers and students to access a wide selection of resources and other information sources throughout the learning process. Unless otherwise noted, these resources are considered to be suitable for both junior and senior high school students.

Authorized resources may be obtained from the Learning Resources Distributing Centre or directly from the publisher or distributor. Refer to Section I (Learning Resource Guide) of this Guide for the complete resource list including curriculum correlations and resource annotations. Additional sources refer to noncommercial or government agencies that offer resources that may be of assistance in this strand.

Sample Student Learning Guides

In addition to the resources, Sample Student Learning Guides are available (refer to Section J of this Guide). These samples, designed for individual student or small group use, provide an instructional plan for selected modules and include the following components:

- Why take this module?
- What are the entry-level competencies?
- What are the exit-level competencies?
- What resources may be accessed?
- What assignments/activities must be completed?
- What are the timelines?
- How will the final mark be calculated?

Sample Student Learning Guides have been developed for the following modules in Agriculture:

- Production Basics
- Landscape/Turf Management 1
- Floral Design 2.

PLANNING FOR AGRICULTURE

The following suggestions are provided to assist teachers and school and school system administrators as they plan to deliver modules from the Agriculture strand.

Selecting Modules

The scope and sequence chart in Section B provides an overview of the Agriculture modules, indicating prerequisites and theme areas. Brief descriptions of the modules follow the scope and sequence chart in Section B.

Course planning should take into consideration module sequences that link with both physical and human resources present in the school and community. Although not required, it is recommended that AGR1010: Agriculture: The Big Picture be a prerequisite/corequisite to all modules in the Agriculture strand.

Agriculture in Junior High

The introductory level modules may be offered at the junior high level. As each school and community will vary in terms of available resources, it is important to consider potential education partners prior to selecting module sequences.

The number of modules will vary according to time available throughout Grades 7, 8 and 9. Modules may be combined into courses and offered within a school year or over a span of a few years. Junior high students may not complete all the learner expectations in all the modules.

Two sample courses based on introductory level modules are outlined below.

Sample A: 50 hours of instruction

COURSE EMPHASIS
Introduction to Agriculture
MODULES
Agriculture: The Big Picture (AGR1010) Production Basics (AGR1030)
RATIONALE/KEY LEARNINGS
Students develop an understanding of the diversity and significance of agriculture, and examine the range of activities involved in producing an agriculture or horticulture product. The course complements the junior high science and social studies programs, and can be linked with other CTS strands including Foods and Mechanics.

Sample B: 75 hours of instruction

COURSE EMPHASIS
Agriculture/Horticulture Production
MODULES
Production Basics (AGR1030) Market Fundamentals (AGR1090) Resource Management (AGR1110)
RATIONALE/KEY LEARNINGS
Students develop practical skills involved in growing a plant or raising an animal commodity, examine basic principles related to marketing the commodity, and research practices used to manage water, soil and land use in production activities. The course complements the junior high science and social studies programs, and can be linked with other CTS strands including Management and Marketing, Mechanics and Wildlife.

Where appropriate, junior high school students may also take intermediate level modules, particularly in the Technology and Applications theme.

Agriculture in Senior High

All introductory, intermediate and advanced level modules may be offered to senior high students. Three sample courses, based on intermediate and advanced level modules and designed to be delivered to senior high school students, are outlined below.

Sample C: 75 hours of instruction

COURSE EMPHASIS
Beginning Floral Design and Plantscape (no previous experience)
MODULES
Basic Floral Design (AGR1080) Floral Design 1 (AGR2080) Marketing 1 (AGR2090)
RATIONALE/KEY LEARNINGS
Students demonstrate practical skills used to construct floral designs and interior plantscapes, and examine techniques for marketing these services to the consumer. This course can be linked with other CTS strands including Career Transitions, Design Studies, Enterprise and Innovation, Financial Management, and Management and Marketing.

Sample D: 100 hours of instruction

COURSE EMPHASIS
Livestock Production (assuming junior high background)
MODULES
Animal Husbandry/Welfare (AGR2020) Livestock/Poultry 1(AGR2040) Protected Structures (AGR2100) Biotechnology (AGR3100)
RATIONALE/KEY LEARNINGS
Students apply principles of animal science and health technology in raising livestock, demonstrate techniques used to maintain housing/fencing structures, and research application of biotechnology in the livestock industry. The course can be linked with other CTS strands including Career Transitions, Construction Technologies, Enterprise and Innovation, Financial Management, Forestry, Management and Marketing, and Mechanics.

Sample E: 125 hours of instruction

COURSE EMPHASIS
Nursery Crop Production (assuming junior high background)
MODULES
Nursery/Greenhouse Crops 1 (AGR2140) Marketing 1 (AGR2090) Soils Management 1 (AGR2120) Integrated Pest Management (AGR2130) Water Management (AGR3110)
RATIONALE/KEY LEARNINGS
Students develop practical skills required for the sustainable production of nursery crops, and examine techniques used to market nursery products. This course can be linked with other CTS strands including Career Transitions, Enterprise and Innovation, Financial Management, Forestry, Management and Marketing, and Mechanics.

Modules could also be grouped into comprehensive courses that develop competencies relevant to career opportunities within a specific industry.

Organizing for Learning

A "learn by doing" approach is recommended for the Agriculture strand. Essentially, the teacher's role becomes that of guide and partner in the learning process. The "learn by doing" approach requires the teacher to be facilitator and coach, rather than subject-based expert, as students actively participate in learning by doing and discovering.

Small group instruction is a good way to foster learning by doing and discovering. Small groups enable students to be active participants in learning, and develop independent and responsible learning habits. As students work in small group situations they will share information, solve problems, develop consensus and help each other learn content and processes.

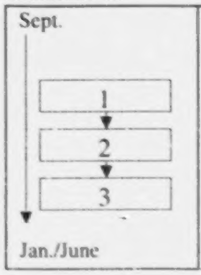
The community has a key role in education and can be an effective partner in the learning process. The use of community members and resources should be integrated into course planning. Business, industry, post-secondary and government agencies offer a wide range of services and resources, as do local clubs, service groups and institutions. When planning for the use of community resources, teachers should ensure that related presentations and/or activities:

- are consistent with student knowledge and skill levels
- demonstrate sound pedagogy
- are exemplary of approved health and safety standards
- provide a balanced approach to curriculum topics and related issues.

Before selecting modules, teachers should check the module parameters outlined in each module (see Sections D, E and F of this Guide).

Modules can be delivered sequentially, concurrently or combined. For example, although the modules from the Technology and Applications theme are sequential, they can be combined with modules from the Social and Cultural Perspectives theme or the Management and Conservation theme.

Scenario A



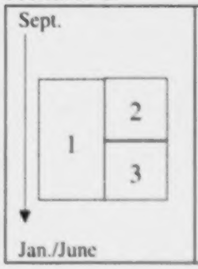
Modules may be taught sequentially, e.g.:

Nursery/Greenhouse Crops 1

↓

Nursery/Greenhouse Crops 2

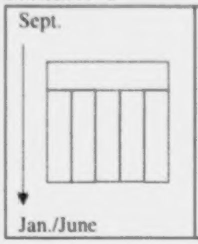
Scenario B



One module, such as Resource Management, may be taught throughout the course (e.g., 20 minutes per class) in conjunction with two other modules.

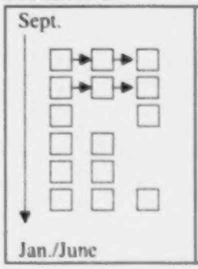
Teachers can also allow students to progress at a rate that is personally challenging; e.g.:

Scenario C



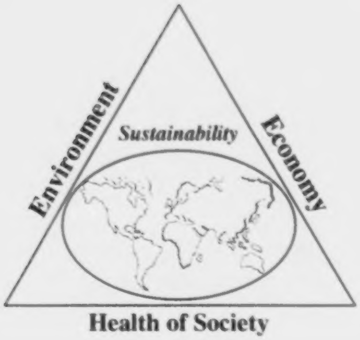
All students take one or two modules together, then are able to select modules from a menu of modules.

Scenario D



From a list of modules defined by the teacher, the students select which ones they will work on and, in consultation with the teacher, establish timelines for completion and submission of assignments, etc.

Plans for learning must address social, environmental and economic perspectives related to sustainable agriculture systems and provide opportunities for students to become involved in learning experiences that reflect a broad understanding of related issues and alternatives. Presentations of course content that reflect a singular or narrow view of social, economic or environmental concerns are not consistent with learner expectations and must be avoided.



As in all CTS strands, students will identify, explore and prepare for future career opportunities. It is recommended that course planning include the integration of relevant career investigations throughout each module, rather than as a singular or isolated study. Career profiles, interviews and job shadowing will acquaint students with the many technical and professional careers associated with the agriculture industry.

Instructional Qualifications

Responsibility for instructional planning and assessment of courses in Agriculture will be assumed by Alberta certified teachers. A background in science, social studies and/or relevant industry (e.g., plant/animal production, animal husbandry, interior/exterior plantscape, floristry, agrifoods, market development, environmental management) will be an asset to those who provide instruction in Agriculture modules, particularly at the intermediate and advanced levels. Teachers may find it desirable to access sources of instructional support available from industry, professional associations and consultants, and relevant government agencies (e.g., Alberta Agriculture, Food and Rural Development).

To ensure compliance with safety and industry standards, some modules may recommend that components of instruction be provided by person(s) having additional credentials granted by business, industry, government or community organizations. Refer to Section D, E or F of this Guide for further information regarding additional instructor qualifications for modules in Agriculture.

In some instances it may be desirable to have other qualified individuals in the community work with the teacher to deliver modules (or parts thereof) where additional instructor qualifications are recommended.

Sensitive Issues

Some Agriculture modules contain topics of a sensitive nature. Teachers will need to be respectful of family and community values in selecting appropriate modules for courses in Agriculture.

For example, ethical issues relevant to agriculture and food production (e.g., AGR3010, AGR3130) may be sensitive in some communities. Emphasis should be placed on a "process" for conflict analysis and not on particular positions that may be expressed. In addition, modules that address animal welfare (e.g., AGR2020) and applications of biotechnology (e.g., AGR3100) must be dealt with in a sensitive manner.

For further clarification of provincial policy on sensitive issues, refer to Alberta Education's Policy on Controversial Issues (*Alberta Education Policy Manual*, 1996). Teachers and administrators should also review jurisdictional policies related to sensitive issues.

Health, Safety and Related Legislation

Facilities used to support an Agriculture program must ensure a safe learning/working environment. Students must be aware of federal, provincial and local regulations governing the tasks they perform, and establish appropriate personal and environmental health and safety procedures in modules that involve:

- the use of specialized hand/power equipment
- the handling and storage of hazardous materials
- outdoor trips and field-based investigation.

Students must understand immediate and potential hazards associated with the tasks they perform, and the possible impact of these hazards on self, others and the environment.

Of particular significance from the perspective of health and safety are modules that support the development of practical skills in plant or animal production (e.g., AGR1030, AGR2020, AGR2030, AGR2040, AGR2070, AGR2140, AGR3030, AGR3040, AGR3070, AGR3140) and landscape maintenance (e.g., AGR1070, AGR2060, AGR3060). Practical components of these modules may be delivered through off-campus education. Consultation with the work site supervisor will be necessary to ensure relevant health and safety standards are maintained.

For additional information on health and safety standards, refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (Appendix 13) and the *Off-Campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995).

Addressing Safety in Off-Campus Excursions

Outdoor trips and field-based investigations are recommended and should be an important part of teaching and learning throughout the Agriculture strand. Safety must be a prime consideration in planning off-campus learning experiences. Both teachers and students should engage in activities commensurate with their level of training and ability. Adequate instructional support, guidance and supervision must be provided at all times. Local jurisdiction and school policies must be understood by principals, teachers, parents, supervisors and students.

Preparation and Risk Anticipation

The preparation stage is an important part of any off-campus learning experience. At this stage of planning, potential risks can be anticipated and either avoided or moderated. The preparation stage should focus attention on:

- trip administration, including the use of parental permission forms, health information forms, school/system authorization forms and accident report forms as required
- a review of laws and regulations relevant to the learning site and activities that will be undertaken
- assessment of the learning site in terms of potential hazards and risks that may be present
- group size and the level of supervision that will be required (i.e., supervisor/student ratio)
- a briefing of parents, school administrators, government/industry authorities or others who should be informed regarding itineraries, participants and emergency response plans
- pre-trip logistics, including transportation, equipment, facility and departure date/time considerations
- student preparation, including the development of background knowledge/ experience and training in specific skill areas.

On-site Risk Management

Safety and risk management involves exercising situation-specific judgement throughout the course of off-campus learning. Judgement is the product of experience, and may include recognizing factors such as dangers imposed by equipment or animals, deteriorating weather, a decline in physical strength, or a more challenging task. Many of the hazard recognition skills can be taught in the classroom in the preparation stage.

A significant aspect of on-site risk management is group management. Teachers can exercise appropriate group management strategies by focusing attention on:

- pacing, including speed of travel, rest stops, distance travelled and fitness level of students
- maintaining a safe distance for observations
- group control, including position of leader, signal systems and buddy systems
- the establishment of group rules and norms
- clearly defined task allocations for each student
- objective hazard recognition in the field, including machinery and equipment, weather, terrain, flora and fauna
- subjective hazard recognition in the field, including level of group energy and level of cooperation.

Emergency Response

If students have been well prepared for field-based learning experiences and appropriate group management strategies exercised, the teacher will have maximized opportunities for effective response to an emergency situation. An effective emergency response action plan should include consideration of:

- a suitable approach to the accident site
- first-aid supplies and techniques
- a strategy for signalling assistance
- an evacuation plan
- group management throughout the emergency situation.

Identifying Linkages

Section H of this Guide describes linkages within CTS and with core and complementary programs.

In particular, teachers should be aware of the linkages of Agriculture with the junior and senior high science programs, and with environmental components in the junior high Environmental and Outdoor Education Program. The Agriculture strand is designed to reinforce, extend and apply related learnings in these courses. Collaborative planning at the school level will ensure meaningful learning experiences through effective integration of these courses.

The Career Transitions strand of CTS provides project, practicum, safety and leadership modules that may be combined with modules in Agriculture to increase opportunity for students to develop expertise, refine their competencies and/or obtain credentials.

Using "Project" Modules

Students may use one or more of the ten project modules to expand learning beyond the competencies outlined in particular Agriculture modules. For example, a plant production or landscape venture may require more than the 25, 50 or 75 hours available through modules by that name. In these instances, project modules from the Career Transitions strand may be accessed so as to provide sufficient time for completion of learning and the task. For each project module, the teacher and student establish specific learning outcomes, assessment criteria, resources and timelines.

Using "Practicum" Modules

Students may use one or more of the four practicum modules to extend the competencies developed in particular Agriculture module(s) in order to attain a recognized credential offered by an agency external to the school. For example, students who plan to work in the primary production sector may wish to access practicum modules from the Career Transitions strand in working toward a "Green Certificate" at the technical level. Practicum modules must be supervised by both a qualified teacher and an experienced professional authorized to supervise trainees for the credential.

Project and practicum modules are **not** designed to be offered as distinct courses and should **not** be used to extend Work Experience 15, 25 and 35 courses.

Improving Smooth Transitions to the Workplace and/or Post-secondary Programs

Refer to Section H of this Guide for potential transitions students may make into:

- the workplace
- related post-secondary programs or other avenues for further learning.

MODULE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION D: INTRODUCTORY LEVEL

The following pages define the curriculum and assessment standards for the introductory level of Agriculture.

Introductory level modules help students build daily living skills and form the basis for further learning. Introductory modules are developed for students who have no previous experience in the strand.

Module learner expectations define the competencies a student must demonstrate to achieve success in a module. Assessment standards define the criteria and conditions to be used for assessing the competencies defined in the module learner expectations.

Specific learner expectations provide a detailed framework for instruction to help students build the competencies defined in the module learner expectations. Additional information and suggestions for instruction are provided in the Notes column; teachers may wish to use this space to record their ideas for instruction or student projects.

Module AGR1010: Agriculture: The Big Picture D.3
Module AGR1030: Production Basics D.9
Module AGR1060: Consumer Products & Services D.13
Module AGR1070: Basic Landscape/Turf Care D.17
Module AGR1080: Basic Floral Design D.23
Module AGR1090: Market Fundamentals D.29
Module AGR1100: Agriculture Technology D.33
Module AGR1110: Resource Management D.37

MODULE AGR1010: AGRICULTURE: THE BIG PICTURE

Level: Introductory

Theme: Social and Cultural Perspectives

Prerequisite: None

Module Description: Students demonstrate knowledge of the diversity and significance of agriculture, and they identify career opportunities within the industry.

Module Parameters: Access to a rural and/or urban agriculture industry.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe the diversity of agriculture activity in Alberta, Canada and the global community	*Assessment of student achievement should be based on:* • a definition/explanation of comprehensive agriculture that encompasses three or more examples of each of the following: – production operations – processing systems and value-added products – marketing and distribution systems – business and labour providing inputs and services – community services and government agencies serving agriculture. Examples to be representative of agriculture activity in Alberta, Canada and the global community. *Assessment Tool* *Knowledge/Application Assessment: Comprehensive Agriculture, AGR1010–1* Space Age Agriculture: Land and Life *Standard* *Address 5 of the criteria for a definition/explanation of comprehensive agriculture (as identified in AGR1010–1) to a standard of 1 on the rating scale*	30

MODULE AGR1010: AGRICULTURE: THE BIG PICTURE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain the economic, environmental and social significance of agriculture	• maintaining a log/journal of reflections and thoughts regarding: – the impact of agriculture activity on social and cultural values, environmental factors and economic viability within the local community – future trends in agriculture, based on consumer preferences, changing world markets, developments in technology and environmental stewardship. *Assessment Tool* *Reflection Guide: The Significance of Agriculture, AGRREF* *Standard* *Complete 5 journal entries; address criteria for reflection to a standard of 1 on the rating scale* • a summary and critique of two or more current news articles regarding the impact of personal choices (food, clothing and lifestyle) on the agriculture industry. *Assessment Tool* *Guide to Critiquing Media Information, AGRMED* *Standard* *Summarize and critique two news articles to a standard of 1 on the rating scale*	40
• identify career opportunities relevant to the agriculture industry	• given current resources on career opportunities in agriculture/horticulture, completing a research project on one or more related occupations. *Assessment Tool* *Career Search: Introductory Level, AGRCAR–1* *Standard* *Conduct research to a standard of 1 on the rating scale*	30

MODULE AGR1010: AGRICULTURE: THE BIG PICTURE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Diversity	• explain the function of subsistence agriculture and commercial agriculture	Research how grain was first planted for domestic use.
	• compare agricultural activities in rural and urban areas; e.g.: – scale of industry – labour requirements – type of commodity produced – market opportunities – degree of mechanization	Visit a Farmers' Market. Consider the diversity of agriculture evident through products being sold.
	• describe production and consumption patterns of agricultural products at local, national and international levels	Use world maps to show food production/ consumption patterns.
	• identify evolving and emerging forms of agriculture that have potential to provide aesthetic, emotional, economic and health benefits; e.g.: – food and textiles – industrial applications – greenhouse production – interior plantscape and landscape – animal husbandry and health care	Survey local area to determine plants/ animals grown for food. Prepare a display featuring these plants/animals.
	• identify business/labour that provides inputs and services to agriculture	
	• describe the function of community services and government agencies serving agriculture.	Invite government and/or industry resource persons to explain their role in agriculture.

MODULE AGR1010: AGRICULTURE: THE BIG PICTURE (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Economic, Environmental and Social Significance	• relate consumer needs and wants to a rationale for the exchange of agricultural goods and services at local, national and global levels • describe the exchange of agricultural goods and services between Canada and other nations, and its impact on the national economy • assess the impact of agriculture on quality of life factors; e.g.: – rural and urban development – sustainable food supply – use of natural resources – lifestyle	Investigate relationships between production and consumption patterns. Prepare a scrapbook of historical trends in the production of a commodity/product. Compare the economic significance of two or more agriculture industries in Alberta. Obtain relevant and current resources from: • Alberta Agriculture, Food and Rural Development • Agriculture Canada • Alberta Economic Development Productivity Council.
	• define sustainable agriculture production • explain the importance of sustainable production systems in meeting societal needs for food and other amenities, conserving natural resources and enhancing the quality of the environment	Research the impact of agriculture on ecosystems.
	• assess the impact of choices and decisions made by citizens on the agriculture industry; e.g.: – selection of foods and textiles – use of land and/or chemicals – concern for animal welfare – support given to development and research.	Keep a journal of media articles regarding consumer preferences and their influence on various facets of the agriculture industry.
Career Opportunities	• outline potential careers within the agriculture/horticulture industry; e.g.: – production science and management – processing (food/fibre/industrial/horticultural) – marketing, distribution and retail services – support services – resource management	Interview community members regarding their involvement in agriculture.

Concept	Specific Learner Expectations	Notes
	The student should:	
Career Opportunities (continued)	• compare career opportunities in rural and urban areas	Compile comprehensive lists of agriculture-related careers.
	• describe employment statistics for one or more career opportunities; e.g.: – types of occupations – number of workers – employment trends	Contact the "Career Hotline" (telephone: 1-800-661-3753).
	• predict career opportunities and trends from employment statistics	Plan for individual/group research and presentations.
	• describe information regarding agriculture/horticulture industries in the future, and resulting career opportunities.	See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR1030: PRODUCTION BASICS

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate the basic steps involved in planting, growing and harvesting a plant commodity; or in raising, growing and finishing an animal commodity, and they identify related career opportunities.

Module Parameters: Access to plant or animal production facilities.

Off-campus learning can support the development of practical skills in plant/animal production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: Opportunities may exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs.

Supporting Module: CTR1210 Personal Safety (Management) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to plant or animal production. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • **identify and demonstrate the basic steps and procedures involved in producing a plant or animal commodity**	*Assessment of student achievement should be based on:* • preparing a flow chart that illustrates basic stages and steps involved in planting, growing and harvesting a plant commodity, or raising, growing and finishing an animal commodity. *Assessment Tool* *Assessment Criteria: Flow Charts, AGRFLO* *Sample Flow Chart: Production Basics, AGR1030–1* *Standard* *Complete flow chart of plant/animal production tasks to a standard of 1 on the rating scale*	25

MODULE AGR1030: PRODUCTION BASICS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
	• performing practical tasks relevant to plant or animal production. Practical tasks to involve monitoring and maintaining one or more of the following: – physical growth requirements – plant/animal health – buildings/structures and equipment. *Assessment Tool* *Lab Assessment, AGRLAB–PLT or AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 1 in applicable areas of task assessment*	25
	• maintaining an anecdotal record of production tasks performed. *Assessment Tool* *Log/Record of Production Tasks, AGRLOG–PLT or AGRLOG–ANM* *Standard* *Complete all sections of the log/record for each task performed over a negotiated/contracted period of time*	
• describe technological systems used within a plant or animal production enterprise	• constructing a drawing/model of a technological system designed to address one or more needs relevant to plant or animal production. *Assessment Tool* *Project Assessment: Technology Design, AGRTEC* *Assessment Criteria: Diagrams and Technical Drawings, AGRDRA* *Standard* *Complete the drawing/model to a standard of 1 on the rating scale*	25

MODULE AGR1030: PRODUCTION BASICS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
- identify career opportunities relevant to plant or animal production	- given access to current information on career opportunities in agriculture production and related service industries, completing a research project on one or more careers in plant or animal production. *Assessment Tool* *Career Search: Introductory Level, AGRCAR–1* *Sample Concept Map/Web: Careers in Agriculture Production, AGR1030–2* *Standard* *Complete research to a standard of 1 on the rating scale*	25
- demonstrate basic competencies.	- observations of individual effort and interpersonal interaction during the learning process. *Assessment Tools* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Production Practices	- identify physical requirements for the production of a commodity; e.g.: – water requirements – light intensity and duration – type of soil – climate and temperature – air – space variables – nutrient requirements	ACTIVITIES WILL VARY ACCORDING TO THE NATURE OF THE PRODUCTION ENTERPRISE; e.g.: • investigate requirements for germination • compare the nutritional value of different feed sources for livestock • grow container crops (e.g., tomatoes, beans, cucumbers) • monitor soil moisture and temperature • gather and compare soil samples • research the functions and components of fertilizers.

MODULE AGR1030: PRODUCTION BASICS (continued)

Concept	Specific Learner Expectations	Notes
Production Practices (continued)	*The student should:* • describe a strategy for protecting the health of a chosen commodity; e.g.: – identification of diseases, deficiencies and ailments – treatment, control and prevention – ethical concerns	Identify common pests/ diseases. Discuss chemical and non-chemical methods of pest and disease control.
	• relate concepts of breeding and selection to production practices; e.g.: – systems of breeding – selection criteria – genetic engineering	Identify common breeds/varieties.
	• describe buildings/structures and equipment appropriate to production; e.g.: – design features – operation and maintenance – safety – economics/cost.	Design/build a hydroponic garden. Research factors in animal health.
Career Opportunities	• research career opportunities and occupations relevant to agriculture or horticulture production; e.g.: – science/production management – support services – resource management	Plan for individual/group research and presentations. Arrange/facilitate information interviews and job shadowing.
	• describe current employment statistics for one or more career opportunities; e.g.: – types of occupations – number of workers – employment trends	See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.
	• predict career opportunities and trends from employment statistics	Contact the "Career Hotline" (telephone: 1-800-661-3753).
	• describe information regarding agriculture or horticulture production industries in the future, and resulting career opportunities.	

MODULE AGR1060: CONSUMER PRODUCTS & SERVICES

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate the basic steps involved in processing (adding value to) an agriculture commodity and/or in providing related services, and they identify career opportunities in agriculture processing.

Module Parameters: Access to an agriculture processing industry and/or related services.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain the basic steps and procedures involved in processing an agriculture commodity and/or in providing a related service	• preparing a flow chart that illustrates basic stages and steps involved in processing an agriculture or horticulture product and providing a related service. *Assessment Tool* *Assessment Criteria: Flow Charts, AGRFLO* *Standard* *Complete flow chart of stages/steps in processing to a standard of 1 on the rating scale.*	25
	• performing practical tasks relevant to processing an agriculture or horticulture product. Practical tasks to demonstrate knowledge of: – inputs to the product or service – processes and techniques – product safety, quality and environmental control – safe use of buildings/structures and equipment. *Assessment Tool* *Lab Assessment: Agriculture Processing, AGRLAB–PRO* *Standard* *Achieve a minimum performance rating of 1 in applicable areas of task assessment*	25

MODULE AGR1060: CONSUMER PRODUCTS & SERVICES (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe technological systems used to process a plant or animal commodity and/or to provide a related service	• constructing a drawing/model of a technological system designed to address one or more needs relevant to processing a plant or animal commodity. *Assessment Tool* *Project Assessment: Technology Design, AGRTEC* *Assessment Criteria: Diagrams and Technical Drawings, AGRDRA* *Standard* *Complete the drawing/model to a standard of 1 on the rating scale*	25
• identify career opportunities relevant to processing agriculture or horticulture products and/or to providing related services	• given access to current information on career opportunities in agriculture processing and related service industries, completing a research project on one or more careers in the agriculture processing industry. *Assessment Tool* *Career Search: Introductory Level, AGRCAR–1* *Standard* *Complete research to a standard of 1 on the rating scale*	25
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Agriculture Processing	• identify steps that are followed in developing a consumer product or providing a related service; e.g.: – inputs to the product or service – processes and techniques – safety, quality and environmental control • explain relevant legislation and practices regarding identification, grading, packaging and labelling of the product or service • describe strategies for ensuring the quality of the product or service; e.g.: – quality indicators – control measures • identify appropriate methods for transporting, storing, advertising and/or promoting the product or service • describe buildings/structures and equipment appropriate to providing the product or service; e.g.: – design features – operation and maintenance – safety – economics/cost.	If studied in sequence with AGR1030: Production Basics, this module provides opportunities for students to "add value" to an agriculture commodity already produced; e.g.: • making bread from grain • making cheese from dairy products. Prepare flow charts/ diagrams of techniques and processes. Engage students in the application of standards established to grade a product. Consider related health issues. Identify major determinants of regional commodity processing.
Career Opportunities	• research career opportunities relevant to developing a consumer product or providing a related service; e.g.: – food/fibre/industrial/horticultural – support services – resource management • describe employment statistics for one or more career opportunities; e.g.: – types of occupations – number of workers – employment trends • predict career opportunities and trends from employment statistics • describe information regarding agriculture or horticulture products and services in the future, and resulting career opportunities.	Plan for individual/group research and presentations. Arrange/facilitate information interviews and job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753). See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR1070: BASIC LANDSCAPE/TURF CARE

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate knowledge of the techniques used to perform basic landscape and turf care services, focusing attention on plant identification, equipment and supplies and basic maintenance tasks; and they identify related career opportunities.

Module Parameters: Access to a residential, recreational and/or roadside landscape.

Facilities and equipment should permit students to perform practical tasks in basic landscape and turf care; e.g., watering, cultivation/mulching, corrective pruning, mowing/trimming/edging of turfgrass, weed control, installation/removal of plant material.

Off-campus learning can support the development of practical skills in basic landscape and turf care; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Supporting Module: CTR1210 Personal Safety (Management) [Career Transitions Strand].

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to basic landscape/turf care. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify plants suitable for use in Alberta landscapes	*Assessment of student achievement should be based on:* • given access to on-site (or photographed) tree, shrub, ground cover, flower and turfgrass species/varieties used in Alberta landscapes, identifying selected specimens according to: – common and botanical names – general characteristics/growth habits – functional use in Alberta landscapes. *Assessment Tool* *Identification Guide: Landscape Plants, AGRIDE–LDS* *Information Sheet: Landscape Plants, AGRINF–LDS* *Standard* *Identify 10 landscape plants, including tree, shrub, ground cover, flower and turfgrass specimens* • given access to on-site (or photographed) weed species found in Alberta landscapes and turfgrasses, identifying selected specimens according to: – common name – growth habit – management technique. *Assessment Tool* *Identification Guide: Landscape/Turfgrass Weeds, AGRIDE–WED* *Information Sheet: Landscape/Turfgrass Weeds, AGRINF–WED* *Standard* *Identify 5 common weeds found in Alberta landscapes and/or turfgrasses*	20

MODULE AGR1070: BASIC LANDSCAPE/TURF CARE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe equipment and supplies used in performing basic landscape and turf-care services	• explaining the types, function and safe use of basic hand and/or power equipment and supplies relevant to: – planting and transplanting – cultivating and aerating – thatch removing and raking – mowing – irrigation – pruning and trimming. *Assessment Tool* *Information Sheet: Hand/Power Equipment and Supplies, AGRINF–EQU* *Sample Test Items: Safety Guidelines for Power Landscape Equipment, AGR1070–1* *Standard* *For each of three areas of landscape/turf-care service identified above:* *– complete all sections of the information sheet for relevant equipment and supplies* *– correctly respond to all questions on a teacher-prepared test covering safety guidelines for the use of hand and/or power equipment*	20
• demonstrate practical skills in performing basic landscape and turf-care services	• performing basic landscape/turf-care service within three of the following areas: – watering of plants and/or turf – cultivation and mulching of plants – corrective pruning of plants – mowing, trimming and edging of turfgrass – control of weeds – installation and/or removal of plant material. Practical skills will involve the application of safety guidelines as noted above in the use of hand and/or power landscape equipment. *Assessment Tool* *Task Checklist: Basic Landscape/Turf Care, AGR1070–2* *Lab Assessment: Landscape and Turf Care, AGRLAB–LDS* *Standard* *Achieve a minimum performance rating of:* *– 1 in basic landscape/turf-care services* *– 3 in the use of hand and/or power equipment*	50

MODULE AGR1070: BASIC LANDSCAPE/TURF CARE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • maintaining an anecdotal record of all landscape/turf-care services performed. *Assessment Tool* *Log/Record of Landscape/Turfgrass Services, AGRLOG–LDS* *Standard* *Completing all sections of the log/record for each service performed*	
• identify career opportunities relevant to landscape and turf maintenance	• given current information on career opportunities in landscape and turfgrass maintenance, completing a research project on one or more related careers. *Assessment Tool* *Career Search: Introductory Level, AGRCAR–1* *Standard* *Research must be conducted to a standard of 1 on the rating scale*	10
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Plant Identification	• describe the general characteristics and functional uses of basic plant groups used in landscaping; e.g.: – trees – shrubs – ground covers and vines – flowers – turfgrasses	Create a pictorial display of basic types of landscape plants. Identify and distinguish among annuals, biennials and perennials.

MODULE AGR1070: BASIC LANDSCAPE/TURF CARE (continued)

Concept	Specific Learner Expectations	Notes
Plant Identification (continued)	*The student should:* • explain criteria used to identify individual plant species; e.g.: – plant height and shape – leaf structure and colour – flower or fruit characteristics • identify common tree, shrub, ground cover, flower and turfgrass species used for landscaping in Alberta • distinguish between native and exotic trees, shrubs and ground covers.	Identify 10 or more different landscape plants.
Equipment and Supplies	• identify and describe hand and/or power equipment commonly used in providing landscape/turf-care services; e.g.: – planting and transplanting tools – cultivating and aerating equipment – thatch removing and raking equipment – mowing equipment – irrigation equipment – pruning and trimming equipment – chemical and fertilizer applicators • calibrate and adjust hand and/or power equipment as required to perform basic landscape/turf-care services • identify and describe organic and inorganic materials commonly used in providing basic landscape/turf-care services; e.g.: – growing media – fertilizers – pesticides • demonstrate safe procedures for using equipment and materials in providing basic landscape/turf care services; e.g.: – safe practices and potential hazards – protective clothing – safety labels and instructions – government legislation and regulation – emergency first aid.	**Practical "on-site" demonstrations are essential.** Follow a set of instructions as illustrated through a demonstration. Possible hand tools include: • hand trimmer • half moon edger • lawn rake • weed puller. Possible power equipment includes: • push mower • power edger • lawn vacuum • cord trimmer • leaf blower. **CAUTION:** **Successful completion of a safety test is essential prior to the use of equipment and materials.**

Concept	Specific Learner Expectations	Notes
Basic Landscape/ Turf Care	*The student should:* • describe the cultural requirements of common trees, shrubs, ground cover, flowers and turfgrasses; e.g.: – soil – moisture – light – temperature – pruning and/or trimming • identify common weeds and insect pests at different stages of growth • compare biological, cultural and chemical control measures for weeds and plant pests • explain safe practices for mixing and applying fertilizers and chemicals • perform basic landscape/turf-care services; e.g.: – irrigate and fertilize plants and turf – cultivate and mulch plants – prune plants – mow and trim turf – remove dead and diseased plant materials – control weeds, disease and pests.	Demonstrate appropriate procedures for maintaining planting beds, annuals and perennials. Collect/mount a display of common weeds. Potential linkages exist with various pesticide applicator/dispenser certificate courses (see Section H: Linkages/ Transitions). Discuss beneficial and harmful effects of insects. List pros and cons associated with the use of common pesticides. Develop a weed-control program. Collect and examine some diseased plants.
Career Opportunities	• research potential careers and the range of occupational opportunities related to providing landscape and turf-care services; e.g.: – establishment and maintenance • home landscape • golf courses • recreational fields and parks • institutional/industrial grounds • highway and roadside turfgrass – design and construction – equipment maintenance and repair – agriscience/resource management • describe current employment opportunities based on employment statistics • describe information regarding trends in landscape and turfgrass management, and future career opportunities.	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • information interviews • work study/experience • job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753). See the National Occupational Profiles in Section H: Linkages/ Transitions.

MODULE AGR1080: BASIC FLORAL DESIGN

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate knowledge of the techniques used to construct basic floral designs and arrangements, focusing attention on plant and flower identification, care and handling of fresh cut flowers and foliage, and simple fresh/dried/artificial arrangements; and they identify related career opportunities.

Module Parameters: Access to a flower arrangement room with refrigeration, a source of water, adequate storage facilities and workbenches/table surfaces for flower arranging.

Instructor training in floral design; e.g., Flowers Canada Accreditation Program, and/or relevant industry experience would be an asset.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify and explain the cultural requirements of cut flowers, foliage and interior plants	*Assessment of student achievement should be based on:* • given access to on-site (or photographed) cut flowers, foliage and interior plants used in the floral industry, identifying selected specimens by: – common and botanical names – basic characteristics and general use. *Assessment Tool* *Identification Guide: Cut Flowers and Interior Plants, AGRIDE–FLO* *Information Sheet: Cut Flowers and Interior Plants, AGRINF–FLO* *Standard* *Identify 10 cut flowers and/or foliage specimens and 5 interior plants*	20

MODULE AGR1080: BASIC FLORAL DESIGN (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate appropriate care and handling of fresh cut flowers and foliage	• under supervision and with regard for safety and sanitation, demonstrate correct technique for: – conditioning fresh cut flowers and greenery for storage – handling dried and fabric flowers and greenery – packaging flowers in sleeves and boxes – packaging gift plants and floral arrangements – tying floral bows using ribbon of different widths – wrapping wires of different gauge with floral tape. *Assessment Tool* *Task Checklist: Basic Floral Design, AGR1080–1* *Standard* *All tasks must be performed to a standard of 1 on the rating scale.*	20
• construct simple floral arrangements	• constructing seven or more fresh, dried and/or artificial floral arrangements as identified in *Task Checklist: Basic Floral Design*. Each arrangement to illustrate the application of design principles outlined in *Product Assessment: Basic Floral Design*. *Assessment Tools* *Development Framework: Floral Construction, AGRDEV–FLO* *Task Checklist: Basic Floral Design, AGR1080–1* *Product Assessment: Basic Floral Design, AGR1080–2* *Lab Assessment: Floral Design, AGRLAB–FLO* *Project Planning: Floral Design, AGRPLN–FLO* *Standard* *Achieve a minimum rating of 1 in product assessment and 1 in lab assessment for each arrangement*	50
• identify career opportunities relevant to the retail florist industry	• given career information relevant to the retail florist industry, completing a research project on one or more career opportunities in floral design and/or interior plantscape. *Assessment Tool* *Career Search: Introductory Level, AGRCAR–1* *Standard* *Research must be conducted to a standard of 1 on the rating scale*	10

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MODULE AGR1080: BASIC FLORAL DESIGN (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Plant and Flower Identification	• research the history and development of floral design	A brief discussion of history will provide a basis for understanding current industry practices.
	• identify cut flowers and greenery commonly used in floral design; e.g.: – greenhouse/fieldgrown cut flowers – imported cut flowers – foliage and filler	Subscribe to the *Florists' Review* (a monthly periodical). Arrange to visit a local florist shop.
	• identify interior plants and gift plants; e.g.: – tropical flowering and foliage plants – flowering bulbs	Plant and flower identification guides used by industry are available from: • United Floral Growers (Burnaby) • Holland Flower Council.
	• identify dried and artificial materials commonly used in floral design; e.g.: – dried flowers and foliage – silk and other fabric materials.	Identify: • 10 or more different cut flowers and/or foliage specimens • five or more interior plants and/or gift plants.

MODULE AGR1080: BASIC FLORAL DESIGN (continued)

Concept	Specific Learner Expectations	Notes
Care and Handling	*The student should:* • describe techniques for the care of perishable floral materials; e.g.: – use of water and preservatives – temperature and humidity control – cleanliness and sanitation – methods of packaging • describe techniques used to condition fresh cut flowers and greenery for storage • describe techniques used to handle and preserve dried flowers and greenery.	**CAUTION:** **Demonstrate safe use of tools prior to practical activities.** Industry resources produced by Redbook Floral Services and available through the Olds College Bookstore include: • Basic Floral Design • Care and Handling of Fresh Flowers and Foliages.
Design and Construction	• describe different construction materials used in floral design; e.g.: – wire, tape and adhesive – ribbon – holding devices and containers • demonstrate basic construction techniques used in floral design; e.g.: – wiring – taping – bow making • demonstrate and apply basic design principles in constructing floral arrangements; e.g.: – colour harmony – composition – balance and symmetry – proportion and scale • construct a boutonniere, corsage, bud vase and rose bowl • construct a simple floral design using fresh, dried and/or artificial materials.	Discuss applications of different design techniques: • symmetrical and asymmetrical • vertical and horizontal • circular and oval. Contact your local Flowers Canada Accreditation Council regional liaison member for information on instructor workshops (see Section H: Linkages/Transitions). Encourage students to gain job/productivity skills through work experience. Students need to experience their perceived skills in a work setting.

MODULE AGR1080: BASIC FLORAL DESIGN (continued)

Concept	Specific Learner Expectations	Notes
Career Opportunities	*The student should:* • research careers and the range of occupational opportunities related to the retail florist industry; e.g.: – nursery and greenhouse production – floral design and service – merchandising and marketing • describe current employment opportunities based on employment statistics • describe information regarding trends in floristry, and future career opportunities.	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • interviews • work study/experience • job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753).

MODULE AGR1090: MARKET FUNDAMENTALS

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Description: Students explain the basic principles involved in marketing a plant or animal product or service, and they identify related career opportunities.

Module Parameters: Access to agriculture marketing facilities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain basic principles involved in marketing an agriculture/horticulture commodity, product or service	• identifying basic components of an existing strategy used to market an agriculture/horticulture commodity, product or service. Marketing components to include: – commodity supply – current and potential markets – marketing principles and strategies – pricing – packaging and labelling – advertising and promotion – sales and distribution. *Assessment Tool* *Assessment Criteria: Components of a Marketing Strategy, AGR1090–1* *Standard* *Identify basic components of the marketing strategy to a standard of 1 on the rating scale*	50
• explain how agriculture/horticulture markets are expanded and existing products are altered to meet the needs of new markets	• developing a plan for expanding market opportunities, altering an existing agriculture or horticulture product, or developing a new product. *Assessment Tool* *Assessment Criteria: Product/Market Development, AGR1090–2* *Standard* *Develop a plan to a standard of 1 on the rating scale*	30

MODULE AGR1090: MARKET FUNDAMENTALS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify career opportunities relevant to marketing an agriculture/ horticulture commodity, product or service	• given access to current information on careers in marketing an agriculture/horticulture commodity, product or service, completing a research project on one or more career opportunities in agriculture marketing. *Assessment Tool* *Career Search: Introductory Level, AGRCAR–1* *Standard* *Complete research to a standard of 1 on the rating scale*	20
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Marketing Principles	• research local, national and international markets for an agriculture/horticulture commodity, product or service • distinguish between non-regulated (open) and regulated (closed) marketing systems • identify and compare viable marketing alternatives for the commodity, product or service; e.g.: – direct producer marketing – open markets – marketing boards – cooperatives • identify factors that influence pricing of the commodity, product or service; e.g.: – market analysis – supply and demand – cost factors	If studied in sequence with AGR1030: Production Basics and/or AGR1060: Consumer Products & Services, this module provides opportunities for students to examine marketing strategies for a commodity/product which they have already produced. Research the role of consumer preferences (as demonstrated through retail and food service industries) in determining markets. The value food chain includes researcher, producer, processor, distributor and vendor. Each agent adds value to meet consumer demands.

MODULE AGR1090: MARKET FUNDAMENTALS (continued)

Concept	Specific Learner Expectations	Notes
Marketing Principles (continued)	*The student should:* • describe the effectiveness of different types of packaging and labelling; e.g.: – for consumer purposes – as a marketing tool • assess the impact of advertising and promotion on personal preferences and consumer decisions.	Visit a supermarket and note grades, date, stamping, etc. Compare methods of packaging. Design/evaluate an approach to marketing. Examine trends in promotional and marketing strategies.
Product Development	• identify factors that influence consumer trends and the development of new markets for an agriculture or horticulture product; e.g.: – economic – environmental – social and demographic • identify market opportunities that arise from specialization, international trade and participation in a global economy • explain the steps followed in altering an existing agriculture or horticulture product, or in developing a new product.	Discuss the role of consumer preferences in product determination. A possible extension activity might be to research the procedures involved in patenting a process or product.
Career Opportunities	• research career opportunities related to marketing an agriculture/horticulture commodity, product or service; e.g.: – market survey – advertising and promotion – distribution and retail services – product development – support services • describe employment statistics related to one or more areas of employment; e.g.: – types of occupations – number of workers – employment trends • predict career opportunities and trends from employment statistics • describe information regarding agriculture/horticulture marketing in the future, and resulting career opportunities.	Plan for individual/group research and presentations. Arrange/facilitate information interviews and job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753). See National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR1100: AGRICULTURE TECHNOLOGY

Level:	Introductory
Theme:	Technology and Applications
Prerequisite:	None
Module Description:	Students describe applications of science and technology within an agriculture or horticulture industry.
Module Parameters:	Access to a construction/fabrication/mechanic's workshop, greenhouse and/or science laboratory.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain how science and technology influence the development of agriculture products, methods and services	• preparing a chart/display that identifies and describes: – a range of needs/problems addressed by the agriculture/horticulture industry within the last 20 years – specific products, processes or services developed in response to each need/problem – applications of science and technology in developing each product, process or service. *Assessment Tool* *Sample Chart: Product Development in the Agriculture/Horticulture Industry, AGR1100–1* *Standard* *Complete a chart/display that identifies products and technologies developed in response to each of ten problems/needs*	20
• describe current applications of science and technology in agriculture production, processing and marketing	• completing a research project on one or more applications of science and technology in each of the following areas: – agriculture/horticulture production – agriculture/horticulture processing – agriculture/horticulture marketing. *Assessment Tool* *Research Process: Applications of Science and Technology, AGR1100–2* *Standard* *Complete all components of research to a standard of 1 on the rating scale*	30

MODULE AGR1100: AGRICULTURE TECHNOLOGY (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• design a simple technological system that addresses a current need in agriculture	• given a specific need within an agriculture or horticulture industry, constructing a drawing/model of a technological system designed to address that need. Drawing/model to address: – component parts and principles of operation – efficient use of resources – human and environmental safety. *Assessment Tool* *Project Assessment: Technology Design, AGRTEC* *Assessment Criteria: Diagrams and Technical Drawings, AGRDRA* *Standard* *Complete the design and drawing/model to a standard of 1 on the rating scale*	50
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tools* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Influences of Science and Technology	• explain technology as the application of knowledge gained from research to solve practical problems in agriculture • identify and describe different types of science and technology used in agriculture; e.g.: – machines – planning/monitoring/management processes – new plant and animal species • describe issues and/or conflicts resulting from the adoption of one or more technologies in agriculture; e.g.: – economic – political – environmental – health	Cite/discuss improvements in effectiveness, efficiency and quality of life. Invite local industry and resource persons to discuss applications of science and technology. Reference statistical surveys of technology impacts. Consider: • energy use • safety concerns • environmental issues

Concept	Specific Learner Expectations	Notes
Influences of Science and Technology (continued)	*The student should:* • predict some future trends in research and technology based on current challenges facing the agriculture industry • relate specific technologies to current and emerging career opportunities in the agriculture industry.	Compare manual and mechanical approaches to addressing a specific challenge in the industry.
Applications of Science and Technology	• describe applications of science and technology in addressing specific plant production needs; e.g.: – seed bed preparation/soil fertility – planting/harvesting – weed and pest control – plant propagation – maintaining soil moisture levels – improved production and yields	Plan for independent/group research and presentations. For example: • zero tillage fertilizers • air seeders and combines • hydroponics and irrigation. Predict future production technologies.
	• describe applications of science and technology in addressing specific needs within the livestock production industry; e.g.: – animal handling – animal housing – nutrition – health – waste management – breeding management – improved production and yields	Invite a local veterinarian as a resource person. For example: • electronic management systems • gene mapping • embryo transfer • artificial insemination. This module provides a good introduction to AGR3100: Biotechnology. Conduct research on the life and work of Dr. Temple Grandin, a professor of animal science.
	• describe specific applications of science and technology in agriculture processing; e.g.: – processing systems – quality control – pollution control – preserving perishable products – packaging and storage	Predict future processing technologies. Discuss quality assurance (QA) programs. Obtain resources from: • Leduc Food Processing Centre • Agriculture, Food and Nutritional Sciences Department, U of A.

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Concept	Specific Learner Expectations	Notes
Applications of Science and Technology (continued)	*The student should:* • describe specific applications of science and technology in agriculture marketing; e.g.: – enterprise budgets – communication – advertising and promotion – commodity sales – product distribution.	Predict future marketing technologies. Research strategic alliances developed among industry partners to increase market share in the global economy (e.g., Canada Beef Export Federation).
Technology Design	• identify a need within an agriculture or horticulture industry • research the need; e.g.: – talk to others in order to clarify ideas – consider similar needs and how they were addressed – make reasoned judgments regarding design potential • generate ideas and alternatives regarding a mechanical system and/or process that will address the need • select the most appropriate alternative and design the technology • construct a drawing/model of the technology by following plans that have been established • assess the design process and technology outcomes in relation to: – original needs and design intentions – efficient use of resources – human and environmental safety • identify possible improvements to the design process and/or technology outcomes.	Discuss technology as problem solving. Plan for activities that involve: • drawing and designing • constructing models. Assess process and outcomes on the basis of: • effectiveness • efficiency • safety in use.

MODULE AGR1110: RESOURCE MANAGEMENT

Level: Introductory

Theme: Management and Conservation

Prerequisite: None

Module Description: Students describe the practices used to manage water, soil and land use; and they present the results of research on one or more related issues in agriculture.

Module Parameters: Access to community and government agencies responsible for sustainable resource management.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe the nature and extent of Alberta's water resource, and explain practices for managing its use	*Assessment of student achievement should be based on:* • given outline maps of Alberta, locating and describing: – four major rivers and four major lakes – geographic areas where irrigation is a common practice. *Assessment Tool* *Task Checklist for Mapping, AGRMAP* *Standard* *Complete applicable mapping tasks to a standard of 1 on the rating scale* • explaining three or more practices used in Alberta to manage limited and/or excess water supplies for agriculture. *Assessment Tool* *Knowledge/Application Assessment: Water Management Practices, AGR1110–1* *Standard* *Respond to a standard of 1 on the rating scale*	25

MODULE AGR1110: RESOURCE MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe the nature and characteristics of soil in Alberta, and explain practices for managing its use	• a presentation or report that describes the characteristics of soil in Alberta and its influence on agriculture practices. Presentation/report to address: – the identification of major soil zones in Alberta – the characteristics of soil within each zone and their influence on agriculture – explanations of three or more soil management practices commonly used in Alberta. *Assessment Tool* *Presentations/Reports: Introductory Level, AGRPRE–1* *Standard* *Achieve a minimum rating of 1 on the rating scale for Presentations/Reports*	25
• explain different uses of land in rural and urban Alberta and the factors upon which land use decisions are made	• completing a research project on rural and urban land use in Alberta. Research to include: – examples of five rural and five urban land uses – consideration of factors involved in making each land use decision – development of a plan (including a 2-D/3-D model) for the use of a specific piece of rural or urban land. *Assessment Tool* *Research Process: Rural and Urban Land Use, AGR1110–2* *Standard* *Complete all components of research to a standard of 1 on the rating scale*	25

MODULE AGR1110: RESOURCE MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify alternatives and consequences associated with one or more issues involving water, soil or land use in agriculture	• given a current issue regarding water, soil or land use for agriculture in Alberta: – negotiating and debating the issue while assuming the role of one or more interest groups – preparing a presenting a position paper that outlines a responsible plan of action. *Assessment Tools* *Negotiation and Debate: Introductory Level, AGRNEG–1* *Position Paper: Resource Management, AGR1110-3* *Standard* *Address criteria in negotiation/debate and the position paper to a standard of 1 on the rating scale*	25
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Water Management	• describe the nature and extent of water resources in different regions of Alberta, and their potential to support agriculture • identify physical, chemical and biological characteristics of water that determine its suitability for use in agriculture	Our water resources will include: • precipitation • surface water • ground water. Interpret local charts and maps of precipitation averages. Research the water cycle and its role in replenishing water supplies.

Concept	Specific Learner Expectations	Notes
	The student should:	
Water Management (continued)	• research techniques used to manage limited and excess water supplies in agriculture; e.g.: – irrigation, storage, conservation practices – diversion, drainage, flood control	Compare and contrast effective and ineffective management strategies.
	• cite examples of legislation used to manage the water resource in Alberta	Examples: • water rights • pollution control.
	• describe the effects of agricultural practices on water quality • explain the impacts of limited, excessive or inappropriate water supplies on humans, livestock, crops, wildlife and ecosystems	Relate prevailing winds and topography to precipitation patterns in Alberta.
	• propose strategies for managing water within a specific rural, urban and/or indoor agriculture environment.	Consider/discuss trade-offs in water use.
Soil Management	• describe the nature and composition of soils present in different regions of Alberta, and their potential to support agriculture • identify physical, chemical and biological characteristics of soil that determine its suitability for use in agriculture	Investigate: • soil development process • soil functions • soil zones and classification • mineral, organic, air and water content. Compare different soil types in relation to water retention/ movement.
	• describe the advantages and disadvantages of different management practices; e.g.: – chemical treatments, addition of organic material – cultivation, no tillage practices – water conservation practices	Research nutrient cycles. Identify organic and inorganic nutrients. Cite practices leading to: • erosional loss • nutrient loss.
	• explain the impacts of soil quality on crops and livestock	Discuss alternatives in soil management.
	• propose strategies for managing soil within a specific rural, urban and/or indoor environment.	Research composting methods. Construct/ monitor a compost pile.

Concept	Specific Learner Expectations	Notes
	The student should:	
Land Use	• describe different uses of land in rural and urban Alberta; e.g.: – resource development – urban development – recreation/protected and natural areas – transportation corridors • define and give examples of multiple use, conservation and sustained yield within the context of water, soil and land use • describe legislation and policies used to manage land in Alberta; e.g.: – land zoning/classification – environmental impact assessment – multiple use/range management courses • identify appropriate uses for land in agriculture by considering: – soil characteristics and topography – water and climate – market value of products – environmental stewardship.	Research public and private land stewardship agencies. Examine historical changes in land use. Set goals for land use in an area. Identify concerns related to land use: • depletion of moisture/nutrients • soil erosion • removal of natural pest control organisms. Assess alternative uses of a specific land site: • agriculture • wood land • recreation • wildlife habitat • building site.
Issues in Resource Management	• present the results of research on an issue involving water, soil or land use in agriculture; e.g.: – identify major viewpoints and stakeholders – distinguish among facts, opinions and beliefs – outline alternatives and consequences • explain the issue by analyzing information gathered.	Contact local government agencies. Collect news articles. Resource management is also important in agriculture processing. Consider issues related to water use, solid waste, packaging reduction and energy conservation. Use computer simulation programs.

MODULE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION E: INTERMEDIATE LEVEL

The following pages define the curriculum and assessment standards for the intermediate level of Agriculture.

Intermediate level modules help students build on the competencies developed at the introductory level and focus on developing more complex competencies. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Module AGR2020: Animal Husbandry/Welfare E.3
Module AGR2030: Field Crops 1 (Materials & Processes) E.9
Module AGR2040: Livestock/Poultry 1 (Materials & Processes) E.15
Module AGR2050: Agrifoods 1 (Materials & Processes) E.23
Module AGR2060: Landscape/Turf Management 1 (Maintenance Practices) E.27
Module AGR2070: Equine 1 (Materials & Processes) E.35
Module AGR2080: Floral Design 1 (Projects for All Occasions) E.41
Module AGR2090: Marketing 1 (Open Marketing Structures) E.47
Module AGR2100: Protected Structures E.53
Module AGR2120: Soils Management 1 (Soil Properties/Classification) E.59
Module AGR2130: Integrated Pest Management E.65
Module AGR2140: Nursery/Greenhouse Crops 1 (Materials & Processes) E.71

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE

Level:	Intermediate
Theme:	Social and Cultural Perspectives
Prerequisite:	None
Module Description:	Students apply the principles of animal science and health technology in providing care for a domestic animal.

Module Parameters: Access to a domestic animal and an appropriate animal housing/fencing structure.

Off-campus learning can support the development of practical skills in animal care; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to animal care. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify and describe indicators of health in a domestic animal and factors that contribute to a healthy animal environment	• completing a research project on factors that contribute to the health and well-being of a domestic animal. Research to focus attention on indicators of health in the animal species, and normal/abnormal vital signs, behaviours and environmental conditions. *Assessment Tool* *Research Process: Animal Health and Well-Being, AGR2020–1* *Standard* *Conduct research to a standard of 2 on the rating scale*	30
• demonstrate practical skills in providing care for a domestic animal	• demonstrating practical skills within each of the following areas of animal care: – feeding – housing – handling and restraint – health and well-being. *Assessment Tool* *Task Checklist: Animal Husbandry and Health Care, AGR2020–2* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in each area of task and lab assessment* • maintaining an anecdotal record of tasks performed in providing care for a domestic animal. *Assessment Tool* *Log/Record of Animal Care, AGRLOG–ANM* *Standard* *Completing all sections of the log/record for animal care tasks performed over a negotiated/contracted period of time*	50

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MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• present a rationale and strategy for addressing animal welfare	• developing a plan for animal welfare that involves: – a review of historical concerns regarding animal welfare – a comparison of animal welfare and animal rights – a strategy for maintaining animal welfare based on: • ethical, economic and social perspectives • welfare needs of the animal • current codes of practice • alternatives and consequences • a recommended plan for action. *Assessment Tool* *Assessment Criteria: Animal Welfare, AGR2020–3* *Standard* *Develop a plan for animal welfare to a standard of 2 on the rating scale*	20
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Health Factors	• identify and describe indicators of health in a selected animal species; e.g.: – physical signs of good and poor health – normal and abnormal vital signs – symptoms of disease and parasites – normal and abnormal behaviour	
	• describe normal/abnormal animal physiology and anatomy for a selected animal	List and describe anatomy systems.
	• describe normal/abnormal food sources, and the impact of nutrient deficiencies on animal health	Discuss relationships between physiological systems.

Concept	Specific Learner Expectations	Notes
Health Factors (continued)	*The student should:* • identify agents and sources of stress for the animal, and their implications for health • describe characteristics of a healthful animal environment, and conditions that can place an animal's health or safety at risk; e.g.: – sanitation – housing – methods of restraint.	Obtain *Recommended Code of Practice for the Care and Handling of Farm Animals* (a series of booklets available from Agriculture Canada). Invite a local veterinarian as a resource person.
Safe Handling and Care	• demonstrate ethical behaviours in providing care for an animal	Plan and provide an appropriate environment for a domestic animal.
	• describe contributions of technology in current animal husbandry and health care practices; e.g.: – nutrition – disease prevention and treatment – reproduction – kennel and cage management	Conduct research. Plan a visit to the local veterinarian.
	• explain basic food requirements in specific situations; e.g.: – newborn – maintenance – growth or finishing – pregnant or lactating mothers – aging	Arrange/facilitate field trips and job shadowing for first-hand observation of safe handling and care techniques. Visit a feed mill.
	• identify shelter needs, and provide/maintain desirable handling, housing and fencing structures	Consider needs with respect to animal exercise and training.
	• monitor vital signs and examine for disease, parasites and other common ailments through: – head-to-toe examination – regular brushing/bathing – care of feet/nails – care of mouth	Invite a local veterinarian and/or industry worker as a resource person. Possible parasites include heart worms, round worms, hood worms, tape worms, fleas, ticks, earmites, mange and ringworm. Identify common ailments of the digestive, urinary, cardiovascular and respiratory systems.

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Safe Handling and Care (continued)	• describe abnormal behaviour, and practise intervention strategies for a sick animal; e.g.: – reduce stress – administer emergency first aid – treat/control disease and other ailments – administer medication	Recognize symptoms of rabies, seizure, diabetes, arthritis. Discuss intervention strategies for shock, cardiac arrest, bleeding and wounds, poisoning, eye/ear injury, bone/joint injuries, injuries from hot/cold and foreign objects.
	• provide appropriate care for young and/or newly born animals	Research how antibiotics and vaccines work.
	• describe veterinary services that are available, and the protocol for accessing these services; e.g.: – when to call – how to prepare.	Given an emergency animal situation, describe appropriate methods of dealing with the emergency.
Animal Welfare	• distinguish between animal welfare and animal rights	Gather relevant news articles.
	• explain the importance of maintaining safe domestic and market-driven environments for animals	Organize student debates on animal welfare issues.
	• describe different perspectives regarding an issue in animal welfare; e.g.: – ethical – economic – social	Research the life and work of Dr. Temple Grandin, an animal behaviour expert. Identify human attitudes/skills to which animals respond in a positive manner.
	• identify and explain the advantages and disadvantages of owning a specific animal	Consider factors such as: • personal lifestyle • cost • needs of animal • function of animal • therapeutic value • life expectancy of animal.
	• identify criteria to be considered when choosing an animal; e.g.: – type of animal – breed – gender	Discuss reproductive choices, and the pros/cons of breeding or sterilization.

MODULE AGR2020: ANIMAL HUSBANDRY/WELFARE (continued)

Concept	Specific Learner Expectations	Notes
Animal Welfare (continued)	*The student should:* • identify and describe legislation intended to address animal welfare • identify and describe organizations in the community that address animal welfare • outline a protocol for responding to an animal welfare issue.	Complete a research paper. Contact resource persons from: • Alberta Agriculture, Food and Rural Development • the SPCA • Alberta Foundation for Animal Care.

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of materials and processes in growing a field crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment and practical production tasks; and they identify related career opportunities. Potential areas of specialization include the production of cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, fruits, medicinal plants and exotic plants.

Module Parameters: Access to a land laboratory.

Facilities and equipment should permit students to perform practical skills in **two** or more areas of crop production; e.g., soil preparation, seeding/propagation, cultivation, irrigation, fertilizing, pest and disease control, harvesting.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify and describe field crop species suited to Alberta climates	• given access to on-site (or photographed) Alberta field crop species, identifying selected species according to: – common name – general characteristics/growth habits – basic structural parts. Identification to include, where possible, structural parts of the root, stem, leaf and flower/seed. *Assessment Tools* *Identification Guide: Field Crop Species, AGRIDE–FLD* *Information Sheet: Field Crop Species, AGRINF–FLD* *Standard* *Identify 10 Alberta field crop species by common name, growth habit and basic structure*	20
	• given a range of field crop species grown in western Canada, conducting research on the unique characteristics of each species and their significance in the production system. *Assessment Tool* *Research Process, CTSRES* *Standard* *For each of 10 field crop species, identify three or more unique characteristics of particular importance in the production system*	
• demonstrate knowledge and safe use of basic equipment used in crop production	• demonstrating knowledge and safe use of basic equipment pertinent to two areas of crop production. *Assessment Tool* *Task Checklist: Field Crops 1, AGR2030–1* *Lab Assessment: Plant Production, AGRLAB–PLT* *Standard* *Achieve a minimum performance rating of 3 in applicable areas of task and lab assessment*	20

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate practical skills in planting, growing and/or harvesting a field crop	• demonstrating practical skills within two of the following areas of crop production: – soil preparation – seeding/propagation – crop cultivation – irrigation – fertilizing – pest/weed/disease control – harvesting. *Assessment Tool* *Task Checklist: Field Crops 1, AGR2030–1* *Lab Assessment: Plant Production, AGRLAB–PLT* *Standard* *Achieve a minimum performance rating of:* *- 2 in applicable areas of crop production* *- 3 in the safe use of hand and power equipment* • maintaining an anecdotal record of production tasks performed in two areas of crop production. *Assessment Tool* *Log/Record of Production Tasks: Plants, AGRLOG–PLT* *Standard* *Completing all sections of the log/record for each production task performed over a negotiated/ contracted period of time*	50
• describe career opportunities relevant to field crop production	• given career information relevant to field crop production, completing a research project on one or more career opportunities within the industry. *Assessment Tool* *Career Search: Intermediate Level, AGRCAR–2* *Standard* *Complete research to a standard of 2 on the rating scale*	10

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Plant Anatomy and Identification	*The student should:* • identify field crops grown in western Canada according to: – common name – general characteristics/growth habits – basic structural parts • describe the structure, function and growth habits of field crop species, and their significance to the producer; e.g.: – cells and tissues – roots – stems – leaves – flowers and fruits • explain basic plant processes and related terminology; e.g.: – water and nutrient intake – respiration – photosynthesis – transpiration • identify field crops that are suited to specific applications in Alberta; e.g.: – vegetable and fruit crops – pulse crops – oil seeds – specialty crops.	Draw, label and list functions of specific plant structures. Prepare a seed display of different field crop species. Assembled displays of seed varieties can be obtained from: • Canadian Wheat Board • Canadian Grains Institute. Prepare/examine microscope slides of plant parts/cross-sections. Plant collections and displays. Prepare models and/or mounts.

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Production Equipment	*The student should:* • identify types of equipment that are used at each stage of production; e.g.: – hand and/or power equipment used in seeding/planting, tillage, water/fertilizer application and harvest – handling equipment, such as trucks, tractors, conveyors and augers • identify and describe criteria relevant to the selection and/or design of production equipment; e.g.: – function, operation and maintenance – safety efficiency – ethical, legal and environmental factors – economics and cost • identify policy, legislation and safe practices relevant to the use of equipment and crop inputs.	
Production Skills	• identify basic physical requirements for producing field crops; e.g.: – water – light (quantity, quality, duration) – temperature – air – space variables – nutrients • describe how weather and climate may affect production activities • relate principles of nutrition to production practices; e.g.: – function and sources of essential nutrients – identifying excesses and deficiencies – fertilizer formulation • describe the symptoms, treatment and prevention of major pests, diseases and ailments that affect the health of plants; e.g.: – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control	Design/conduct experiments that monitor the effect of environmental factors on growth. Calculate germination rates. Recognize nutrient deficiencies. Use nontoxic and safe materials for controlling plant pests and diseases.

MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	*The student should:* • perform basic field crop production activities; e.g.: – soil preparation – seeding/propagation – crop cultivation – irrigation/fertilization – pest/weed/disease control – harvesting.	Compare "common" and "certified" seed systems.
Career Opportunities	• research careers and the range of occupational opportunities related to producing field crops; e.g.: – primary production – agriscience/production management – resource management – support services • describe current employment opportunities based on employment statistics • outline trends in field crop production and future career opportunities.	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • information interviews • work study/experience • job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753). See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of materials and processes in raising livestock, poultry or other animal commodities, focusing attention on anatomy and identification, rations and feeding, housing, animal handling and restraint, animal health and welfare, and care for the young; and they identify related career opportunities. Potential areas of specialization include the production of beef, dairy, poultry, swine, sheep, game, exotics and bees and/or the study of aquaculture.

Module Parameters: Access to livestock, poultry or specialty animals and to appropriate animal housing and fencing structures.

Off-campus learning can support the development of practical skills in animal production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to animal production. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • **describe the basic anatomy, physiology and breeds of cattle (beef or dairy), sheep, swine, poultry or specialty animals**	*Assessment of student achievement should be based on:* • identifying by name and function the basic structural parts of a beef, dairy, sheep, swine, poultry or specialty animal. Identification to include, where possible, structural parts of the head, body and limbs. *Assessment Tool* *Identification Guide: Basic Anatomy and Physiology, AGR2040–1* *Standard* *Identify by name and function 15 basic structural parts located in the head, body and limb areas of particular importance in the production system* • explain vital life processes of respiration, digestion, excretion, growth and reproduction for a livestock species, and the significance of each in the production system. *Assessment Tool* *Knowledge/Application Assessment: Vital Life Processes, AGR2040–2* *Standard* *Respond to a standard of 2 on the rating scale* • compare the unique characteristics of two or more breeds of a beef, dairy, sheep, swine, poultry or specialty animal, and describe their significance to the producer. *Assessment Tool* *Research Process: Animal Breeds, AGR2040–3* *Standard* *Conduct research to a standard of 2 on the rating scale.*	30

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• **demonstrate practical skills in raising, growing and finishing cattle (beef or dairy), sheep, swine, poultry or specialty animals**	• demonstrating practical skills within three of the following areas of animal production: – feeding – housing – handling and restraint – health and welfare – breeding operations – care for young. Production tasks will involve the application of appropriate safety guidelines for animal husbandry. *Assessment Tool* *Task Checklist: Livestock/Poultry 1, AGR2040–4* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in applicable areas of task and lab assessment*	50
	• maintaining an anecdotal record of production tasks performed. *Assessment Tool* *Log/Record of Animal Care, AGRLOG–ANM* *Standard* *Completing all sections of the log/record for animal care tasks performed over a negotiated/contracted period of time*	
• **demonstrate appropriate use of basic structures and equipment in animal production**	• demonstrating knowledge and safe use of basic structures and equipment pertinent to each area of animal production. *Assessment Tool* *Task Checklist: Livestock/Poultry 1, AGR2040–4* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in applicable areas of task and lab assessment*	10

MODULE AGR2040: LIVESTOCK/POULTRY 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe career opportunities relevant to beef, dairy, sheep, swine, poultry or specialty animal production	• given career information relevant to livestock, poultry or specialty animal production, completing a research project on one or more career opportunities within the industry. *Assessment Tool* *Career Search: Intermediate Level, AGRCAR–2* *Standard* *Complete research to a standard of 2 on the rating scale.*	10
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Anatomy and Physiology	• describe the characteristics and function of major anatomical structures in livestock, poultry or an animal specialty • explain vital life processes and related terminology; e.g.: – respiration – digestion – waste excretion – growth – reproduction	Draw, label and list the functions of specific anatomical structures. Prepare models. Prepare diagrams of an animal's digestive system. Cattle and sheep have rumens (4-compartment stomachs), which enable them to digest grass and crop wastes.

Concept	Specific Learner Expectations	Notes
Anatomy and Physiology (continued)	*The student should:* • identify major classes and breeds of commercial species • describe the desirable characteristics of major classes and breeds • identify animal breeds that are suited to specific production and market applications.	Dairy cattle producers place emphasis on a cow's udder and milk production records. Beef, hog and meat poultry producers place emphasis on muscling for meat production. Identify specific breeds of animals from pictures/slides. Invite a rural development specialist/veterinarian as a resource person.
Production Skills	• identify basic physical requirements for producing livestock, poultry or specialty animals; e.g.: – water and food – light – temperature – air – space variables • describe how weather and climate may affect production activities	List the tasks required to provide proper care for an animal. Potential linkages exist with the Alberta Agriculture Green Certificate Farm Training Program: • beef • dairy • sheep • swine. For further information, see Section H: Linkages/Transitions.
	• describe normal/abnormal feed sources, and the impact of nutrient deficiencies on animal health • provide basic feed requirements in specific situations; e.g.: – maintenance – growth or finishing – pregnant or lactating mothers • demonstrate accepted methods of handling and restraining animals	Prepare a flow chart that illustrates techniques for ration formulation. Develop a chart depicting the nutritional requirements of a specific animal. Compare different feeding systems.

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	*The student should:* • describe common pests, diseases and ailments that affect the health of animals within the industry; e.g.: – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control • administer basic treatments for common pests, diseases and/or ailments; e.g.: – injections – dusting • identify policy, legislation and safe practices relevant to raising livestock, poultry or specialty animals.	Consider the use of: • drug administration • vaccination • feed additives. Examine the role of veterinary services. Research herd health factors and considerations.
Structures and Equipment	• describe housing and fencing structures used in producing livestock, poultry or specialty animals; e.g.: – fences and shelters – totally confined rearing structures • clean and disinfect trailers, pens and other animal holding structures • safely operate and maintain equipment used at each stage of production within the industry; e.g.: – hand and/or power equipment used in maintaining health and nutrition – handling equipment, such as trucks, conveyors and augers • evaluate the design and/or construction of structures and equipment in respect to: – function, operation and maintenance – safety and efficiency – ethical, legal and environmental factors – economics and cost • identify policy, legislation and safe practices relevant to the use of structures and equipment within the industry.	Research an appropriate facility for one type of livestock. Construct models of fences, gates, corrals, etc., suited to a specific animal. Design/construct models of structures and equipment. Collect/label pictures of various types of animal shelters. Potential linkages exist with the Construction Technologies strand (see CON2100, a module on agri-structures).

Concept	Specific Learner Expectations	Notes
	The student should:	
Career Opportunities	• research careers and the range of occupational opportunities related to producing livestock, poultry or animal specialties; e.g.: – primary production – agriscience/production management – resource management – support services • describe current employment opportunities based on employment statistics • outline trends in livestock, poultry or specialty production, and future career opportunities.	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • information interviews • work study/experience • job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-753). See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR2050: AGRIFOODS 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate knowledge of materials and processes used in producing an agrifood product or in providing a related service, focusing attention on industry inputs, and processing technologies and practices; and they identify related career opportunities. Potential areas of investigation include dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruits/vegetables and honey.

Module Parameters: Access to an agrifood industry.

Supporting Module: AGR1060 Consumer Products & Services

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe the range of input materials, food products and/or related services characteristic of an agrifood industry	• given access to information concerning an agrifood industry, a presentation or report (written, oral or visual) on: – inputs to processing within the industry, including commodity inputs, human and natural resources and technology – products and/or related services provided by the industry. *Assessment Tool* *Presentations/Reports: Intermediate Level, AGRPRE–2* *Standard* *Complete the presentation or report to a standard of 2 on the rating scale*	20
• explain technologies and practices used in processing an agriculture food product or in providing a related service	• a portfolio that describes technologies and practices used to produce a food product or provide a related service within an agrifood industry. *Assessment Tool* *Portfolio: Profile of an Agrifood Industry, AGR2050–1* *Standard* *Prepare and present the portfolio to a standard of 2 on the rating scale*	60

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe career opportunities relevant to the agrifood industry	• given information concerning careers within the agrifood industry, completing a research project on one or more related career opportunities. *Assessment Tool* *Career Search: Intermediate Level, AGRCAR–2* *Standard* *Complete research to a standard of 2 on the rating scale*	20
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Nature of the Industry	• describe the products and/or services produced by an agrifood industry • describe inputs to processing within the industry; e.g.: – commodity inputs/raw materials – financial resources – human and natural resources – technology • explain supply management systems that may affect supply of raw materials to the industry; e.g.: – government regulations – board management systems • identify environmental factors that affect the viability of the processing industry; e.g.: – water – land and soil – weather and climate.	Plan for individual/group research and presentations. Prepare a glossary of industry terms. Processing systems are driven by the "value chain" that includes researcher, producer, processor, distributor and vendor. Each agent adds value to meet the needs of the consumer. Contact the Alberta Food Processors' Association.

MODULE AGR2050: AGRIFOODS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Processing Techniques	• explain the stages and steps in processing the commodity and providing the value-added product and/or service	Construct flow charts/ diagrams.
	• explain applications of technology in processing the commodity and providing the value-added product and/or service	
	• explain the need for quality control within the processing industry; e.g.: – testing/inspection of raw materials – product quality and uniformity	For a look at quality control in cheese production, obtain the video entitled *On the Line* (see Section I: Learning Resource Guide).
	• explain systems used to grade products within the industry	
	• describe methods of preserving perishable products within the industry; e.g.: – blanching and canning – dehydration and freeze-drying – fermentation – refrigeration and freezing – atmosphere control – food additives	Examine the effects of temperature and packaging on product quality and shelf life.
	• describe packaging and labelling practices within the industry	
	• describe transportation and storage practices within the industry, and their impact on industry location and product costs	Draw a map that illustrates how transportation and storage may influence industry location.
	• describe buildings/structures and equipment used in processing, transportation and storage; e.g.: – design features – operation and maintenance – safety standards – economics/cost	Design/construct models of structures and equipment.
	• identify safety concerns, regulations and standards within the industry.	

Concept	Specific Learner Expectations	Notes
	The student should:	
Career Opportunities	• research careers and the range of occupational opportunities related to processing an agricultural commodity or providing a value-added product/service; e.g.: – processing – business/sales – communications – research and development – quality assurance – transportation – education	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • information interviews • work study/experience • job shadowing.
	• describe current employment opportunities based on employment statistics	Contact the "Career Hotline" (telephone: 1-800-661-3753).
	• outline trends in the agrifood industry and future career opportunities.	See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: AGR1070 Basic Landscape/Turf Care

Module Description: Students demonstrate the techniques used to provide landscape and turf maintenance services, focusing attention on plant identification, equipment maintenance, effective landscape practices, cost analysis and pricing. Potential areas of specialization include home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds and roadside landscapes.

Module Parameters: Access to residential, recreational, institutional/industrial and/or roadside landscapes.

Facilities and hand and power equipment should permit students to perform practical tasks in landscape management; e.g., watering, cultivation/mulching, corrective pruning, mowing/trimming/edging of turfgrass, weed control, installation/removal of plant material.

Instructor training in first aid and in the use of pesticides is recommended; e.g., Standard First Aid, Pesticide Applicator/Dispenser Certificate.

Off-campus learning can support the development of practical skills in landscape/turf management; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to landscape/turf management. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify plants suitable for use in Alberta landscapes	*Assessment of student achievement should be based on:* • given access to on-site (or photographed) tree, shrub, ground cover, flower and turfgrass species/varieties used in Alberta landscapes, identifying selected specimens according to: – common and botanical names – general characteristics/growth habits – functional use in Alberta landscapes. *Assessment Tool* *Identification Guide: Landscape Plants, AGRIDE–LDS* *Information Sheet: Landscape Plants, AGRINF–LDS* *Standard* *Identify 10 landscape plant (including tree, shrub, ground cover, flower and turf grass specimens) in addition to those identified in AGR1070* • given access to on-site (or photographed) weed species found in Alberta landscapes and turfgrasses, identifying selected specimens according to: – common name – growth habit – management technique. *Assessment Tool* *Identification Guide: Landscape/Turfgrass Weeds, AGRIDE–WED* *Information Sheet: Landscape/Turfgrass Weeds, AGRINF–WED* *Standard* *Identify 5 common weeds (found in Alberta landscapes and/or turfgrasses) in addition to those identified in AGR1070*	20

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • perform routine maintenance and safety checks on equipment used in landscape practices	*Assessment of student achievement should be based on:* • performing routine maintenance tasks on hand and power landscape/turfgrass equipment, including when applicable: – cleaning/sharpening of hand tools and mower blades – lubrication of hand and power tools – checking of oil, filters, battery, spark plugs and radiator on small engines – cleaning of air filters on small engines – checking tires and tire pressure – preparation of equipment for off-season storage. *Assessment Tool* *Task Checklist: Landscape/Turf Management 1, AGR2060–1* *Lab Assessment: Landscape and Turf Care, AGRLAB–LDS* *Standard* *Achieve a minimum performance rating of 2 on three pieces of equipment used in landscape/turfgrass maintenance, one of which is power driven*	20

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate practical skills in installing and maintaining landscape plants and turfgrass	• performing landscape/turfgrass installation and maintenance services within four of the following areas: – planting and transplanting – preparing turfgrasses in the spring season – corrective pruning trees and heading/thinning back – fertilizer calculation and application to landscaped/turfed areas – winterizing of trees, shrubs, perennials and turfgrasses. Installation and maintenance services will involve the application of appropriate safety guidelines for using hand and power equipment. *Assessment Tool* *Task Checklist: Landscape/Turf Management 1, AGR2060–1* *Lab Assessment: Landscape and Turf Care, AGRLAB–LDS* *Standard* *Achieve a minimum performance rating of:* *– 2 in installation and maintenance services* *– 3 in the use of hand and power equipment*	50
	• maintaining an anecdotal record of all landscape/turfgrass services performed. *Assessment Tool* *Log/Record of Landscape/Turfgrass Services, AGRLOG–LDS* *Standard* *Completing all sections of the log/record for each service performed.*	
• explain techniques used to cost landscape and turfgrass services	• preparing a simple cost analysis for one landscape/turfgrass service. *Assessment Tool* Landscaping Principles and Practices *(Unit 25: Pricing Landscape Maintenance)* *Standard* *Accurately complete a cost analysis for one service performed*	10

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MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Plant Identification	• describe methods of identifying landscape plants; e.g.: – using common names – using botanical nomenclature • identify and select appropriate trees, shrubs and ground covers for given applications in Alberta landscapes; e.g.: – herbaceous and woody – evergreen and deciduous • identify and select appropriate flowers for given applications in Alberta landscapes; e.g.: – annual, biennial and perennial – bulbs, tubers and rhizomes • identify and select appropriate turfgrasses for given applications in Alberta landscapes; e.g.: – rhizome producing, stolon producing and bunch type – fine, medium and course leaf texture.	Identify 10 or more landscape plants on site. Collect/mount a weed display. Identify specialty plants, including bulbs, corms, tubers and fleshy roots. Choose and plant bare root, ball and burlap, and container grown stock. Relate anatomy of turfgrass to appropriate management practices. Distinguish between single species turf plantings and grasses that are mixtures or blends.
Equipment Maintenance	• perform daily maintenance on hand and power equipment used in landscape practices; e.g.: – clean/sharpen hand tools and mower blades – lubricate hand and power tools – check oil, oil filter, battery and radiator on small engines – clean air filters on small engines – check tires and tire pressure	**CAUTION:** **Review safety knowledge and skills from AGR1070 prior to practical activities.**

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES)
(continued)

Concept	Specific Learner Expectations	Notes
Equipment Maintenance (continued)	*The student should:* • perform safety checks on equipment and report malfunctions • diagnose and troubleshoot equipment failure • show appropriate records regarding the use of power equipment; e.g.: – hours of operation – periodic servicing • prepare equipment for off-season storage; e.g.: – cleaning – draining – oil change – repair.	Potential linkages exist with the "Landscape Gardener Apprenticeship Training Program" (see Section H: Linkages/Transitions).
Installation/ Maintenance Tasks	• demonstrate proper planting and/or transplanting techniques for landscape plants; e.g.: – handling of plant materials – preparing the growing media and seed bed – installing plants and turf – staking and guying the plants • demonstrate proper techniques for preparing turfgrasses in the spring season; e.g.: – clean-up – dethatching – first cutting – patching the lawn – aeration and top dressing – fertilizing • explain the reasons for pruning trees, shrubs and other landscape plants • demonstrate proper techniques for pruning trees, shrubs and other landscape plants; e.g.: – corrective – heading back – thinning – jump cuts	Perform general landscape and turf installation / maintenance services. Keep a daily log that details maintenance services performed. Demonstrate correct use of core aerator and power rake. Calculate fertilizer requirements for turfed areas. Demonstrate corrective pruning on trees and shrubs: • thinning, heading back, jump cuts • hedge shearing • pruning of conifers.

MODULE AGR2060: LANDSCAPE/TURF MANAGEMENT 1 (MAINTENANCE PRACTICES) (continued)

Concept	Specific Learner Expectations	Notes
Installation/ Maintenance Tasks (continued)	*The student should:* • explain types of winter damage to landscape plants and ways to protect against winter injury; e.g.: – windburn and sunscald – temperature extremes – ground heaving – damage owing to ice, snow and salt – snowplow and vehicle damage • demonstrate proper techniques for winterizing trees, shrubs, perennials and turfgrasses.	Explain winterizing techniques for trees, shrubs and turf. Potential linkages exist with various pesticide applicator/dispenser certificate courses (see Section H: Linkages/ Transitions).
Cost Analysis	• identify factors that determine the cost of a landscape/turfgrass service; e.g.: – material costs – labour costs – equipment usage costs – overhead costs • prepare simple cost analyses for basic landscape/ turfgrass services.	Consider daily work ethic in assessing landscape services performed: • attendance • punctuality • use of time • group skills/attitudes • respect for property • clean-up.

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students demonstrate practical skills and approved practices in providing for the daily care of a horse, focusing attention on the origin and history of horses, anatomy and conformation, types and breeds, handling and feeding practices, and basic health care; and they identify related career opportunities.

Module Parameters: Access to a horse and appropriate equine housing/fencing structures.

Off-campus learning is required to support the development of practical skills in the care of equine; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

It is recommended that students have a minimum of 50 hours of previous experience in horse handling and horse care prior to commencing the study of this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: Learner expectations in AGR2070 Equine 1 and AGR3070 Equine 2 are introductory to competencies developed in the two-year Equine Science Diploma Program at Olds College, Alberta. Opportunities for recognition of prior learning may be considered upon admission to this post-secondary program.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to the care of equine. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe the significance, origin and conformational features of the horse	• completing a research project that examines the significance, origin and conformational features of the horse. Research to address: – social and economic significance – origin and history – conformational features of the head, neck, fore limb and hind limb – factors determining balance. *Assessment Tool* *Research Process: Origin, History and Conformation of the Horse, AGR2070–1* *Standard* *Complete all components of research to a standard of 2 on the rating scale*	15
• identify the types, breeds and characteristics of horses	• given access to information concerning the types and breeds of horses, a presentation or report (oral, written or visual) that describes: – distinguishing characteristics of draft horses and light horses – dominant/recessive traits and selection criteria relevant to specific breeds of draft horses and light horses – commonly used systems of breeding, including inbreeding, linebreeding and crossbreeding. *Assessment Tool* *Presentations/Reports: Intermediate Level, AGRPRE–2* *Standard* *Complete the presentation or report to a standard of 2 on the rating scale*	10

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate practical skills and approved procedures for horse handling, feeding and health care	• demonstrating practical skills within each of the following areas of daily horse care: – handling and restraint – feeding practices – health care practices. *Assessment Tool* *Task Checklist: Equine 1, AGR2070–2* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in each area of task and lab assessment* • maintaining an anecdotal record of daily horse care tasks performed. *Assessment Tool* *Log/Record of Animal Care, AGRLOG–ANM* *Standard* *Complete all sections of the log/record for daily horse care tasks performed over a negotiated/contracted period of time*	70
• describe career opportunities relevant to the care, breeding and training of horses	• given current information on careers that involve the care, breeding and training of horses, completing a research project on one or more related career opportunities. *Assessment Tool* *Career Search: Intermediate Level, AGRCAR–2* *Standard* *Complete research to a standard of 2 on the rating scale*	5
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Significance, Origin and Conformation	• identify different types of benefits associated with horses; e.g.: – pleasure – companionship – performance – breeding	Invite guest speakers from horse breeding associations.
	• describe the origin and history of horses, and factors that lead to domestication	Individual/group research and presentation.
	• identify and describe the characteristics and functions of basic external parts of a horse	Draw, label and list functions of specific external parts.
	• analyze and explain conformational features of major body parts; e.g.: – head and neck – fore limb and hind limb	Construct models; relate conformational features to specific applications.
	• identify factors determining a horse's balance.	
Types and Breeds	• identify and describe the distinguishing characteristics of draft horses and light horses	Contact breed associations for breed promotion material and guest speakers.
	• identify breeds of draft and light horses that are suited to specific applications	
	• explain how characteristics of the horse are passed from generation to generation, and commonly used breeding systems; e.g.: – inbreeding – linebreeding – crossbreeding	
	• explain heredity principles relevant to a specific breed of horse; e.g.: – dominant and recessive traits – selection criteria and procedures.	

MODULE AGR2070: EQUINE 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Handling, Feeding and Health Care	• identify environmental factors that need to be considered in providing care for a horse; e.g.: – weather and climate – land, soil and water characteristics	Invite a local veterinarian to discuss accepted handling and care techniques.
	• demonstrate appropriate techniques for handling a horse; e.g.: – approaching a horse – leading a horse – cleaning a horse's feet – grooming a horse – tying a horse – restraining a horse	List the tasks required to provide daily equine care; **emphasize approved safety practices for working with horses**. Discuss the importance of, and challenges related to equine foot care. Examine techniques for trimming bridle path, muzzle and possibly ears. Discuss the process of desensitization.
	• perform approved horse feeding practices by providing: – water requirements	Discuss the functional and nutritional value of water; identify water requirements for varying equine activities and conditions.
	– roughage needs	Explain the role of grains, high protein concentrates and other additives in a horse's diet; identify forages used in equine nutrition.
	– concentrate needs	Discuss advantages/disadvantages of commercially prepared horse feeds.
	• describe the importance of a regular feeding schedule	Calculate and recognize weights/volumes of feeds. Design and calculate balanced rations; establish and implement a regular feeding schedule.

Concept	Specific Learner Expectations	Notes
	The student should:	
Handling, Feeding and Health Care (continued)	• identify and compare characteristics/symptoms of a healthy horse and an ill horse • monitor and assess vital signs of a horse, recognizing abnormalities	Consider: • visual signs • vital signs • habits/behaviours. Utilize the expertise of a local veterinarian.
	• demonstrate appropriate care for leg wounds on a horse	Research topical leg preparations and their correct use; discuss the healing process and complications of wound healing.
	• describe appropriate care of a horse with: – colic – respiratory disease	Discuss symptoms of infectious disease and treatment of infected horses; identify equine vaccines available and vaccination protocols.
	• identify health factors that indicate the need for veterinarian services	Establish protocols for equine medical emergencies.
	• describe policy, legislation and safe practices relevant to providing horse care.	Identify contents of an equine first aid kit.
Career Opportunities	• research careers and the range of occupational opportunities that involve the care, breeding and/or training of horses; e.g.: – breeding and production – health sciences/veterinary medicine – stable management – professional training/coaching – race track management	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations.
	• describe current employment opportunities based on employment statistics	Arrange/facilitate: • information interviews • work study/experience • job shadowing.
	• outline trends in equine science, and future career opportunities.	Contact the "Career Hotline" (telephone: 1-800-661-3753). See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: AGR1080 Basic Floral Design

Module Description: Students demonstrate knowledge of the practices involved in providing floral design and interior plantscape services, focusing attention on plant and flower identification, elements and principles of design, floral projects for all occasions, interior plant care and marketing practices.

Module Parameters: Access to a flower arrangement room with refrigeration, a source of water, adequate storage facilities and workbenches/table surfaces for flower arranging.

Instructor training in floral design; e.g., Flowers Canada Accreditation Program, and/or relevant industry experience would be an asset.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify and explain the cultural requirements of cut flowers, foliage and interior plants	*Assessment of student achievement should be based on:* • given access to on-site (or photographed) cut flowers, foliage and interior plants used in the floral industry, identifying selected specimens by: – common and botanical names – basic characteristics and general use. *Assessment Tool* *Identification Guide: Cut Flowers and Interior Plants, AGRIDE–FLO* *Information Sheet: Cut Flowers and Interior Plants, AGRINF–FLO* *Standard* *Identify 10 cut flowers and/or foliage specimens and 5 interior plants; species identified must be in addition to those identified in AGR1080*	20

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• construct fresh, dried and/or artificial floral arrangements	• completing all components of a research project on design principles (i.e., rhythm, harmony, depth, line, texture and focal emphasis) and colour theory. *Assessment Tool* *Research Process: Design Principles and Colour Theory, AGR2080–1* *Standard* *Research must be conducted to a standard of 2 on the rating scale*	40
	• constructing six or more fresh, dried and/or artificial floral arrangements as identified in *Task Checklist: Floral Design 1*. Each arrangement to illustrate the application of design principles outlined in *Product Assessment: Floral Design 1.* *Assessment Tool* *Developmental Framework: Floral Construction, AGRDEV–FLO* *Task Checklist: Floral Design 1, AGR2080–2* *Product Assessment: Floral Design 1, AGR2080-3* *Lab Assessment: Floral Design, AGRLAB–FLO* *Project Planning: Floral Design, AGRPLN–FLO* *Standard* *Achieve a minimum rating of 2 in product assessment and 2 in lab assessment for each arrangement*	
• demonstrate practical skills in maintaining indoor plantscapes	• performing a maintenance routine for indoor plants that includes monitoring growth media, watering, fertilizing, pest control, pruning, waste removal and plant rotation. *Assessment Tool* *Task Checklist: Care of Indoor Plants, AGR2080–4* *Standard* *All tasks must be performed to a standard of 2 on the rating scale*	30

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MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain techniques used to cost products within the floral industry	• calculating the cost and selling price of floral arrangements. *Assessment Tool* *Pricing Worksheet: Floral Services, AGRPRI-FLO* *Standard* *Accurately complete all sections of the pricing worksheet for each of three floral arrangements constructed*	10
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated Throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Plant and Flower Identification	• identify cut flowers and greenery commonly used in floral design; e.g.: – greenhouse/fieldgrown cut flowers – imported cut flowers – foliage and filler • identify interior plants and gift plants; e.g.: – tropical flowering and foliage plants – flowering bulbs	Subscribe to the *Florists' Review* (a monthly periodical). Arrange a visit to a local florist shop. Flower and plant identification guides used by industry are available from: • United Floral Growers (Burnaby) • Holland Flower Council.

Concept	Specific Learner Expectations	Notes
Plant and Flower Identification (continued)	*The student should:* • identify dried and artificial materials commonly used in floral design; e.g.: – dried flowers and foliage – silk and other fabric materials • relate different growth styles of flowers to their use in floral arrangements • explain the advantages and disadvantages of using different types of floral materials.	Identify: • 10 or more different cut flowers and/or foliage specimens • five or more interior plants and/or gift plants. Species identified should be in addition to those identified in AGR1080.
Design and Construction	• explain and apply elements and principles of design; e.g.: – line, form, pattern and texture – colour, balance and rhythm – scale and proportion – harmony, contrast and repetition • apply the colour wheel and basic colour theory • demonstrate advanced design techniques; e.g.: – crescent – hogarth curve – T-shape – L-shape	**CAUTION:** **Review safety practices prior to practical activities.** Industry resources produced by Redbook Floral Services and available through the Olds College Bookstore include: • Basic Floral Design • Advanced Floral Design • Care and Handling of Fresh Flowers and Foliages. Apply principles of: • rhythm and harmony • depth and line • texture • focal emphasis. Discuss terms/techniques of design: • pave • binding • grouping • clustering • layering.

MODULE AGR2080: FLORAL DESIGN 1 (PROJECTS FOR ALL OCCASIONS) (continued)

Concept	Specific Learner Expectations	Notes
Design and Construction (continued)	*The student should:* • design and construct fresh, dried and/or artificial floral arrangements for special purposes and occasions; e.g.: – calendar events – weddings – funerals – hospitals.	Arrange for students to gain job/productivity skills through work experience. Students need to experience their perceived skills in a work setting. Contact your local Flowers Canada Accreditation Council regional liaison member for information on instructor workshops (see Section H: Linkages/Transitions).
Plantscape Maintenance	• identify indoor plants and gift plants, explaining the cultural requirements of each; e.g.: – light intensity and duration – water and soil conditions – temperature and humidity • assess the placement of indoor plants by applying knowledge of their cultural requirements • identify and explain sources of environmental stress for indoor plants; e.g.: – central heating systems – air conditioning • explain legislation and safe practices regarding the handling, mixing and application of plant pesticides	Identify on-site five or more different indoor plants and/or gift plants (in addition to those identified in AGR1080). Perform general care of flowering plants and tropical foliage plants in home, school or office for at least three weeks. Keep a daily log of maintenance services performed.

Concept	Specific Learner Expectations	Notes
Plantscape Maintenance (continued)	*The student should:* • plan and implement a maintenance routine for an indoor plantscape; e.g.: – adjust/regulate light – monitor growth media – water and fertilize – control pests – prune and remove waste material – rotate plants • demonstrate diagnostic skills regarding common plant problems; e.g.: – soil/growing medium – water and drainage – fertilizers/growth stimulants – pests, diseases and other disorders.	Suggested resources: • *Landscaping Principles and Practices* • *The Commercial Greenhouse* • *The Houseplant Expert.* Consider daily work ethic in assessing plantscape services performed: • attendance • punctuality • use of time • group skills/ attitudes • respect for property • clean-up.
Floral Marketing	• identify fixed and variable costs associated with floral services • explain and apply pricing formulas used in the floral industry • calculate the cost price and selling price of a floral arrangement • explain the importance of accountability for pricing practices used within the industry.	Distinguish between the concepts of wholesale and retail. Calculate the cost and selling price for a variety of floral products and services.

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of general marketing principles within the context of an agriculture or horticulture industry, focusing attention on materials and services offered to the consumer through open (free enterprise) marketing structures and marketing techniques; and they identify related career opportunities.

Module Parameters: Access to an agriculture or horticulture industry.

Supporting Module: AGR1090 Market Fundamentals

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • **develop and present a plan for marketing an agriculture/horticulture commodity, product or service through an open (free enterprise) marketing structure**	*Assessment of student achievement should be based on:* • developing and presenting a plan for marketing an agriculture/horticulture commodity, product or service through an open (free enterprise) marketing structure. Marketing plan to address: – current and potential markets – product supply and/or development – marketing principles and strategies – pricing – packaging and labelling – advertising and promotion – sales and distribution networks. *Assessment Tool* *Assessment Criteria: A Marketing Plan, AGR2090–1* *Standard* *Develop and present the marketing plan to a standard of 2 on the rating scale*	80

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe career opportunities and the range of employment opportunities relevant to marketing an agriculture/ horticulture commodity, product or service	• given access to current information on career opportunities in marketing an agriculture/horticulture commodity, product or service, completing a research project on one or more careers in agriculture marketing. *Assessment Tool* *Career Search: Intermediate Level, AGRCAR–2* *Standard* *Complete research to a standard of 2 on the rating scale*	20
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Marketing Principles	• explain the goals of marketing an agriculture/ horticulture commodity, product or service; e.g.: – market position and profit margin – image creation and industry strength – price discovery – product exposure • compare potential strategies that might be used to distribute the product or service in the marketplace; e.g.: – extensive (open) – selective (niche) – exclusive (franchise)	Consider linkages with the Management and Marketing strand. Access basic marketing textbooks used in this strand; e.g.: • *Marketing: A Canadian Perspective* • *Marketing: A Global Perspective* • *Marketing Dynamics* • *Marketing Today*.

MODULE AGR2090: MARKETING 1 (OPEN MARKETING STRUCTURES) (continued)

Concept	Specific Learner Expectations	Notes
Marketing Principles (continued)	*The student should:* • illustrate the laws of supply and demand, and factors that cause changes in supply, demand and pricing of the commodity, product or service; e.g.: – imports and exports – environmental factors – consumer choices – economic conditions – technology	Invite marketing specialists to discuss marketing systems. Marketing systems are driven by the "value chain" that includes researcher, producer, processor, distributor and vendor. Each agent adds value to meet the needs of the consumer.
	• examine competition in both domestic and international markets, and barriers/restrictions on free trade; e.g.: – cultural, ethical, political, legal – economic systems – international organizations – trade agreements	Identify impacts of recent changes in technology on marketing practices; e.g.: • production • transportation • processing • preserving.
	• identify sources of market information relevant to the commodity, product or service; e.g.: – data base – private consultation	Example: • CanFax, a data base of timely cattle market information. Use weekly marketing reports to develop a graph of price trends.
	• describe the stages through which the agriculture/horticulture product moves en route to the consumer; e.g.: – inputs assembly – processing – brokering of product – transport.	Prepare flow charts/diagrams of product stages en route to the consumer. Visit an auction, grain elevator, packing house or cannery.
Market Development	• describe one or more strategies that may be used to promote an agriculture/horticulture commodity, product or service: e.g.: – advertising – personal sales – telemarketing – display – in-store samples – trade shows	

Concept	Specific Learner Expectations	Notes
	The student should:	
Market Development (continued)	• assess opportunities for the global marketing of the commodity, product or service; e.g.: – the United States and Mexico – nations of the Pacific Rim – other developing nations	
	• explain the role of market research and product development in adapting the commodity, product or service to meet present and future market needs; e.g.: – consumer polls – surveys – focus groups	Design/conduct a consumer survey regarding preferences for agricultural products.
	• describe factors that influence consumer preferences and the development of new products and markets within the industry; e.g.: – ethical, cultural, religious – demographic – environmental – economic	Create a new product, design a package and market the product within school/ community.
	• outline market conditions leading to, and steps in altering the product or service, or developing a related product or service.	A possible extension activity might be to research the process followed to "patent" a new product or service.

Concept	Specific Learner Expectations	Notes
Career Opportunities	*The student should:* • research careers and the range of occupational opportunities related to marketing an agriculture/horticulture commodity, product or service; e.g.: – farm gate market services – wholesale/retail services – distribution and transportation – market research and analysis – product development – advertising and promotion – government services • infer career opportunities and trends from employment statistics • outline agriculture/horticulture industries in the future, and resulting career opportunities in marketing.	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • information interviews • work study/experience • job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753). See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE AGR2100: PROTECTED STRUCTURES

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students identify essential components of a controlled growing/living environment and demonstrate the techniques used to manage the growing/living environment within a protected enclosure.

Module Parameters: Access to a greenhouse structure or livestock/poultry enclosure.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify and explain essential components of controlled growing/living environments	*Assessment of student achievement should be based on:* • identifying six or more environmental components commonly controlled in protected enclosures for crop and/or livestock production, and specific technologies/materials used to control each environmental component. *Assessment Tool* Agriscience and Technology, *Chapter 16: Controlled Living Environments* *Standard* *Complete all components of the "Chapter Review" for Chapter 16: Controlled Living Environments*	10

MODULE AGR2100: PROTECTED STRUCTURES (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe ways in which controlled growing/ living environments can be adapted for crop production or livestock housing	• prepare a design for environmental control that addresses one or more problems in a crop or livestock production venture. Design to address: – identification of a production problem that can be addressed through environmental control – proposed enclosures and/or equipment that address production problems through partial or complete control of the living environment – accurate working drawings and/or models of the production facility. *Assessment Tool* *Project Assessment: Technology Design, AGRTEC* *Assessment Criteria: Diagrams and Technical Drawings, AGRDRA* *Standard* *Complete the design and drawing/model to a standard of 2 on the rating scale*	40
• demonstrate techniques used to regulate and manage growing environments within a protected structure	• demonstrating practical skills in operating a protected enclosure to regulate and manage a growing/living environment. Where possible, practical skills will address production needs related to the: – control of temperature, humidity, ventilation and/or lighting – use of watering and feeding systems – control/management of pests and disease – disposal of waste materials. *Assessment Tool* *Task Checklist: Controlled Growing Environments, AGR2100–1* *Lab Assessment, AGRLAB–PLT or AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in applicable areas of task and lab assessment*	50

MODULE AGR2100: PROTECTED STRUCTURES (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • maintaining an anecdotal record of tasks performed in operating a protected enclosure for production purposes. *Assessment Tool* *Log/Record of Production Tasks, AGRLOG–PLT or AGRLOG–ANM* *Standard* *Complete all sections of the log/record for tasks performed over a negotiated/contracted period of time*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated Throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Essential Components	• define and give examples of controlled growing environments	Consider "minimum altering" (e.g., fence or cold frame) and "maximum altering" (e.g., greenhouse or totally confined rearing structure).
	• describe environmental components that are commonly controlled in protected enclosures; e.g.: – temperature – humidity – light intensity – atmosphere	
	• explain how specific problems in agriculture production are solved through environmental control	Consider: • light quality • light intensity • light exposure time.
	• describe control systems and technologies used to maintain temperature, humidity, light and atmospheric gases at specific levels	Plan for individual/small group research and presentations.

Concept	Specific Learner Expectations	Notes
Essential Components (continued)	*The student should:* • describe methods of maintaining sanitation and reducing/minimizing contaminants • identify utility/service requirements and energy conservation methods for a controlled growing environment.	
Agricultural Applications	• explain applications of controlled growing environments in crop or livestock production; e.g.: – temperature, light, humidity and atmosphere control systems – feed and watering systems – sanitation and health practices • prepare a design for environmental control that addresses one or more problems in a crop or livestock production venture; e.g.: – identify production problems caused by environmental factors – design structures and equipment that address production problems through partial or complete control of the growing environment – prepare accurate working drawings and/or models of the production facility • identify benefits and problems resulting from the use of protected enclosures in crop or livestock production.	Applications should be specific to one area of production. Keep design briefs simple. Consider the use of simulations in: • planning • layout • construction.

MODULE AGR2100: PROTECTED STRUCTURES (continued)

Concept	Specific Learner Expectations	Notes
Management Practices	*The student should:* • identify safety hazards and demonstrate safe practices while performing production tasks within a protected enclosure • regulate and manage the growing environment for a designated crop or livestock species; e.g.: – operate control systems to maintain temperature, humidity and ventilation at proper levels – operate artificial lighting and shade-control mechanisms to maintain proper light intensity – regulate watering and feeding systems to ensure nutritional requirements are met • maintain a daily log that details activities regarding production and/or facility management • demonstrate appropriate sanitation and health practices within a protected enclosure; e.g.: – manage/control disease and pests – dispose of waste material • perform routine maintenance services and repairs to protected enclosures.	List the necessary steps taken in managing/ maintaining a controlled growing environment. Consider: • heating • lighting • humidity • ventilation • nutrition/watering systems • sanitation.

MODULE AGR2120: SOILS MANAGEMENT 1 (SOIL PROPERTIES/CLASSIFICATION)

Level: Intermediate

Theme: Management and Conservation

Prerequisite: None

Module Description: Students examine soil formation and classification, conduct tests to determine the physical and chemical properties of soils, and they explain the impact of soil properties on productivity.

Module Parameters: Access to a science laboratory and land laboratory.

Note: Specific learner expectations in AGR2120 Soils Management 1 and AGR3120 Soils Management 2 are consistent with Soils Investigations (SOIL100–35) at Olds College, Alberta. Teachers should contact the Registrar's Office, Olds College, regarding transfer of credit for competencies developed in this module and in AGR3120 Soils Management 2.

Supporting Module: AGR1110 Resource Management and Conservation

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe the origin and composition of soils in Western Canada	*Assessment of student achievement should be based on:* • a theory test in which the student demonstrates knowledge of the origin and composition of soils in western Canada. *Assessment Tool* *Sample Test Items: Origin and Composition of Soils,* Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery*	15

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
	• given an Alberta grassland or forest soil profile, – identifying characteristics of each master horizon – determining the parent material and soil forming factors. *Assessment Tool* Soils Investigations I *Assignment Book* *Lab Investigations: Soil Profile Analysis, AGR2120–1* *Standard* *Complete all related exercises in the assignment book; conduct lab investigations to a standard of 2 on the rating scale*	15
• identify physical properties of soils, and describe their relationship to soil productivity	• a theory test in which the student demonstrates knowledge of the physical properties of soil. *Assessment Tool* *Sample Test Items: Physical Properties,* Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery*	20
	• given four soil samples, a soil texture triangle and Munsell colour chart: – manually estimating the relative percentages of sand, clay and silt for each sample – determining the textural class of each soil sample – identifying the colour name and Munsell notation for each soil sample. *Assessment Tool* *Lab Investigations: Soil Texturing, AGR2120–2* Soils Investigations *Materials Kit* *Standard* *Conduct lab investigations using equipment/ supplies provided in the materials kit to a standard of 2 on the rating scale*	20

MODULE AGR2120: SOILS MANAGEMENT 1 (SOIL PROPERTIES/CLASSIFICATION)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify chemical properties of soils, and describe their relationship to soil productivity	• a theory test in which the student demonstrates knowledge of the chemical properties of soil. *Assessment Tool* *Sample Test Items: Chemical Properties,* Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery*	15
	• given four soil samples, a pH test kit and an electrical conductivity meter: – measuring soil pH for each soil sample – measuring electrical conductivity for each soil sample. *Assessment Tool* *Lab Investigations: Soil Acidity and Conductivity, AGR2120–3* Soils Investigations *Materials Kit* *Standard* *Conduct lab investigations using equipment/supplies provided in the materials kit to a standard of 2 on the rating scale*	15
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Soil Development	• describe major geological processes leading to the origin of soils in western Canada • identify and describe factors that influence the formation of different kinds of soils; e.g.: – climate – living organisms – parent materials – topography – time	Contact Department of Instructional Design, Olds College, for additional support materials.

Concept	Specific Learner Expectations	Notes
Soil Development (continued)	*The student should:* • describe the major components of soil and their relationship to soil productivity; e.g.: – minerals – organic matter – air – water • identify master horizons of a soil profile, and relate common horizon suffixes to soil forming factors • interpret and compare the soil profiles of forest and grassland environments • list and describe the soil orders of the Canadian System of Soil Classification; e.g.: – distinguishing characteristics – typical horizon sequences.	Assess a local piece of land regarding soil formation factors that have helped to shape soil to its present condition. Demonstrate the water-holding capacity of different soils. Construct soil profile diagrams.
Physical Properties	• define soil texture and describe textural classes of soil • apply hand-texturing techniques to estimate the texture of a soil sample; e.g.: – dry consistence test – moist cast test – ribbon test • define soil structure and describe factors that influence the formation of soil structure • identify different types of soil structures, and relate soil structure to common soil horizons • explain the significance of colour as an indicator of soil conditions, and descriptors used to indicate soil colour • measure soil colour using the Munsell Soil Colour Chart • interpret relationships between physical properties of soil and plant growth.	Plan laboratory activities in hand texturing. Map soil zones of the prairie provinces. Plan for laboratory activities in measuring soil colour.

MODULE AGR2120: SOILS MANAGEMENT 1 (SOIL PROPERTIES/CLASSIFICATION) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Chemical Properties	• describe the nature and development of acid and alkaline soils • define and measure soil reaction (pH) • explain active and reserve acidity, and their relationship to the buffering capacity of soil • describe the effect of soil pH on plant growth, and methods of adjusting soil pH • describe the origin and characteristics of saline soils • define and measure soil salinity • describe the effect of soil salinity on plant growth, and strategies for managing saline soils.	Plan laboratory activities in measuring soil pH. Plan laboratory activities in measuring the electrical conductivity of soils.

MODULE AGR2130: INTEGRATED PEST MANAGEMENT

Level: Intermediate

Theme: Management and Conservation

Prerequisite: None

Module Description: Students apply knowledge of biological, cultural and chemical pest-control measures within the context of an agriculture, horticulture or forest industry.

Module Parameters: Access to an agriculture production, horticulture or forest industry.

Instructor training in the use of pesticides is recommended; e.g., Pesticide Applicator/Dispenser Certificate.

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe the life cycle and ecology of common pests in an agriculture, horticulture or forest industry	*Assessment of student achievement should be based on:* • given an agriculture, horticulture or forest industry, identifying and classifying common pests within each of the following categories: – weed (annual, perennial) – insect (order) – disease (bacteria, fungus, virus). – vertebrate. *Assessment Tool* Backyard Pest Management in Alberta *Standard* *Identify and classify three weeds, three insect pests, three diseases and three vertebrate pests* • illustrating and describing the anatomy, life cycle and food web for one or more of the pests identified within each category. *Assessment Tool* *Assessment Criteria: Diagrams and Technical Drawing, AGRDRA* *Standard* *Complete each illustration/description to a standard of 2 on the rating scale*	20

MODULE AGR2130: INTEGRATED PEST MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe biological, cultural and chemical pest-control strategies and basic principles of integrated pest management	• a presentation or report that describes basic principles and practices, examples and the benefits/costs of: – biological, cultural and chemical pest control – integrated pest management. *Assessment Tool* *Presentations/Reports: Intermediate Level, AGRPRE–2* *Standard* *Complete the presentation or report to a standard of 2 on the rating scale*	20
• explain legislation and policies regarding the safe handling, storage and use of chemical and biological control agents	• reading and interpreting label information regarding the safe handling, storage and intended application/use of: – chemical control agents, including emulsifiable concentrates, liquids, wetable powders, dusts, granules and fumigation materials – biological control agents, including predatory insects, infectious organisms and resistant plants. *Assessment Tool* *Task Checklist: Integrated Pest Management, AGR2130–1* *Standard* *Achieve a minimum performance rating of 3 in applicable areas of task assessment*	20
• develop and implement an integrated pest management program	• developing and implementing a basic integrated pest management program for two or more pests within an agriculture, horticulture or forest industry. *Assessment Tool* *Task Checklist: Integrated Pest Management, AGR2130–1* *Standard* *Achieve a minimum performance rating of 2 in applicable areas of task assessment*	40
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

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Concept	Specific Learner Expectations	Notes
	The student should:	
Life Cycles and Ecology	• define a pest and describe specific pest problems in agriculture, horticulture or forestry	A pest is generally considered to be an organism that adversely affects human activities. Therefore, determination of pests will depend upon context.
	• explain the benefits of pest management to agriculture, horticulture and forestry	
	• describe the biology and life cycles of major groups of pests; e.g.: – weeds – insects – diseases – vertebrates	Diagram and explain ecosystem structures.
	• identify and classify a range of common pests; e.g.: – mites, ticks – birds – fungi – weeds – insects – rodents	Consider limiting factors on populations in ecosystems. Collect, identify and mount insect and weed pests.
	• explain the interrelatedness of common pests with ecosystems and environments; e.g.: – relationship of soil, water and air characteristics to plant/animal health – food webs and energy chains – environmental factors that limit populations.	Draw/construct food webs and energy chains involving common pests.
Methods of Pest Control	• explain basic principles of biological pest control and give examples of beneficial organisms used to control pest populations; e.g.: – predators – parasites – pathogens	Conduct case studies on different techniques of control.
	• explain basic principles of cultural pest control and give examples of cultural practices used to control pest populations; e.g.: – soil tillage – crop rotation – clean culture	

Concept	Specific Learner Expectations	Notes
Methods of Pest Control (continued)	*The student should:* • explain basic principles of chemical pest control and give examples of chemical families and pesticide formulations used to control pest populations • describe and give examples of physical and mechanical pest-control strategies • identify regulatory bodies and legislation established to assist pest-control programs • explain the role of breeding programs in developing organisms that have genetic resistance to pests • describe and compare the advantages and disadvantages of biological, cultural, chemical, physical, mechanical and regulatory pest-control programs.	Discuss the importance of rotating chemical groups being used to avoid pest tolerance. Explain genetic resistance.
Integrated Management	• describe the history of pest management • define and give reasons for the development of integrated pest management; e.g.: – management versus control perspective – environmental and human health concerns • explain the basic principles and strategies of integrated pest management; e.g.: – identification of key parts – biology of crop/host and its ecosystem – ecosystem manipulation – economic threshold levels – pest sampling and monitoring • cite benefits and problems related to the use of integrated pest management as a pest-control strategy.	Compare and contrast the concepts of "pest control" with "pest management." Explain the significance of: • economic thresholds • scouting procedures • record keeping.

MODULE AGR2130: INTEGRATED PEST MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Practical Procedures	• identify specific pest problems within an agriculture, horticulture or forest industry • perform pest sampling and monitoring procedures in order to determine the presence of pests, their stage of development and the nature/ extent of damage caused	Invite an agricultural specialist to explain the advantages/ disadvantages of different pest control measures.
	• identify threshold levels that determine when pest control measures should be implemented • identify and apply pest management procedures that are based upon relevant aspects of pest/host biology and the ecosystem	For additional information, see Section 4 in *Agriscience Fundamentals and Applications*.
	• explain safe techniques in pesticide application; e.g.: – use of equipment and supplies – mixing and application techniques – clean-up and disposal • describe the impact of pest-control practices on human and environmental health.	Potential linkages exist with various pesticide applicator/dispenser certificate courses (see Section H: Linkages/ Transitions).

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)

Level: Intermediate

Theme: Technology and Applications

Prerequisite: None

Module Description: Students apply knowledge of materials and processes in growing a nursery or greenhouse crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment, and practical production tasks; and they identify related career opportunities.

Module Parameters: Access to a land laboratory and/or controlled growing environment.

Facilities and equipment should permit students to perform practical skills in **three** or more areas of nursery or greenhouse crop production; e.g., soil preparation, propagation, transplanting, cultivation, watering and fertilizing, pest and disease control.

Instructor training in the use of pesticides is recommended; e.g., Pesticide Applicator/Dispenser Certificate.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-Campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). See Section H (Linkages/Transitions) of this guide for further information.

Supporting Modules: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify and describe nursery or greenhouse plants suited to Alberta climates	• given access to on-site (or photographed) tree, shrub, perennial, annual and/or tropical plant species/ varieties used in the nursery and greenhouse industry, identifying selected specimens according to: – common and botanical names – growth habit and taxonomy – specific applications in Alberta. *Assessment Tool* *Identification Guide: Nursery and Greenhouse Plants, AGRIDE–NUR* *Information Sheet: Nursery and Greenhouse Plants, AGRINF–NUR* *Standard* *Identify 10 tree, shrub, perennial, annual and/or tropical plant species/varieties*	20
	• a concept test in which the student demonstrates knowledge of: – basic plant structures (including cell, tissue, stem, leaf, root, flower and fruit) and their function in plant growth and development – the life cycles (including growth stages and duration) of annuals, biennials and perennials. *Assessment Tool* The Commercial Greenhouse *Standard* *60% of the questions answered correctly*	
• describe hand and power equipment and related supplies used in nursery or greenhouse crop production	• explaining the types, function and safe use of hand and power equipment and supplies relevant to each stage of plant production. *Assessment Tool* *Information Sheet: Hand/Power Equipment and Supplies, AGRINF–EQU* *Standard* *Completing all sections of the information sheet for hand/power equipment and supplies relevant to three areas of plant production*	10

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate practical skills in growing a nursery or greenhouse crop	• performing practical skills within three of the following areas of plant production: – preparation of the growing medium/seed bed – propagation – transplanting – crop cultivation – watering and fertilizing – control of plant pests and diseases involving the use of nontoxic and safe materials. Plant production tasks will involve the application of appropriate safety guidelines for using hand and power equipment and supplies. *Assessment Tool* *Task Checklist: Nursery/Greenhouse Crops 1, AGR2140–1* *Lab Assessment: Plant Production, AGRLAB–PLT* *Standard* *Achieve a minimum performance rating of:* *- 1 in applicable areas of plant production* *- 3 in the safe use of equipment and supplies* • maintaining an anecdotal record of all production tasks completed. *Assessment Tool* *Log/Record of Production Tasks: Plants, AGRLOG–PLT* *Standard* *Completing all sections of the log/record for each production task performed*	60
• describe career opportunities relevant to nursery or greenhouse crop production	• given career information relevant to nursery or greenhouse crop production, completing a research project on one or more career opportunities within the industry. *Assessment Tool* *Career Search: Intermediate Level, AGRCAR–2* *Standard* *Research must be conducted to a standard of 2 on the rating scale*	10

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Plant Anatomy and Identification	• describe the structure, function and growth habits of plants; e.g.: – cells and tissues – roots – stems – leaves – flowers and fruits	Draw, label and list functions of specific plant structures.
	• explain basic plant processes and related terminology; e.g.: – water and nutrient intake – respiration – photosynthesis – transpiration	Prepare models and/or mounts. Research how solar energy is stored in plants.
	• identify nursery or greenhouse plants; e.g.: – using common names – using botanical nomenclature	Gather, label and display collections of plants.
	• identify plants that are suited to specific applications; e.g.: – potted and bench-grown greenhouse crops – vegetable and fruit crops – field and container-grown nursery crops – specialty crops.	Prepare/examine microscope slides of plant parts/cross-sections.

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)
(continued)

Concept	Specific Learner Expectations	Notes
Structures, Equipment and Supplies	*The student should:* • describe criteria relevant to the selection of structures, equipment and supplies; e.g.: – ease of operation/maintenance – safety – cost – environmental impact • use appropriate structures in producing nursery or greenhouse crops; e.g.: – fences and cold frames – greenhouses • use in a safe manner appropriate hand and power equipment and related supplies at each stage of production • identify policy, legislation and safe practices relevant to the use of structures, equipment and supplies.	Design/construct models of effective structures. Potential linkages exist with modules on agri-structures in the Construction Technologies strand.
Production Skills	• identify basic physical requirements for producing a nursery or greenhouse crop; e.g.: – water – light (quantity, quality, duration) – temperature – air – space variables – nutrients • describe how weather and climate may affect production activities • demonstrate methods used to propagate nursery or greenhouse plants; e.g.: – sexual methods – asexual methods	Design/conduct experiments that monitor the effect of environmental factors on growth. Calculate germination rates.

MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES) (continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	*The student should:* • apply principles of nutrition to production practices; e.g.: – function and sources of essential nutrients – identifying excesses and deficiencies – fertilizer formulation • implement appropriate strategies for the treatment and prevention of major pests, diseases and ailments that affect the health of plants; e.g.: – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control.	Recognize nutrient deficiencies. Grow plants suitable for sale. Use nontoxic and safe materials for controlling plant pests and diseases.
Career Opportunities	• research careers and the range of occupational opportunities related to producing nursery or greenhouse crops; e.g.: – primary production – agriscience/production management – resource management – support services • describe current employment opportunities based on employment statistics • outline trends in nursery or greenhouse crop production, and future career opportunities.	Plan for individual/group research and presentations. Research information regarding: • job description • employment markets • education/training • wage expectations. Arrange/facilitate: • information interviews • work study/experience • job shadowing. Contact the "Career Hotline" (telephone: 1-800-661-3753). See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.

MODULE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION F: ADVANCED LEVEL

The following pages define the curriculum and assessment standards for the advanced level of Agriculture.

Advanced level modules demand a higher level of expertise and help prepare students for entry into the workplace or a related post-secondary program.

Module AGR3010: Issues in Agriculture F.3
Module AGR3030: Field Crops 2 (Management Techniques) F.7
Module AGR3040: Livestock/Poultry 2 (Management Techniques) F.13
Module AGR3050: Agrifoods 2 (Standards & Regulation) F.19
Module AGR3060: Landscape/Turf Management 2 (Installation & Repair) F.23
Module AGR3070: Equine 2 (Management Techniques) F.31
Module AGR3080: Floral Design 2 (Creative Design & Display) F.39
Module AGR3090: Marketing 2 (Closed Marketing Structures) F.45
Module AGR3100: Biotechnology F.49
Module AGR3110: Water Management F.53
Module AGR3120: Soils Management 2 (Soil Testing & Amending) F.59
Module AGR3130: Sustainable Agriculture Systems F.65
Module AGR3140: Nursery/Greenhouse Crops 2 (Management Techniques) F.69

MODULE AGR3010: ISSUES IN AGRICULTURE

Level: Advanced

Theme: Social and Cultural Perspectives

Prerequisite: None

Module Description: Students analyze a range of issues relevant to agriculture and food production, and they develop strategies for dealing with agriculture issues within a global context.

Module Parameters: Access to community and government agencies responsible for agriculture planning, research and sustainable resource management.

Note: This module may raise sensitive ethical concerns. Emphasis should be placed on a "process" for conflict analysis and not on particular positions that may be expressed.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• analyze a range of economic, environmental and social issues in agriculture	• analyzing alternatives and consequences associated with each of five issues in agriculture. Alternatives and consequences to address relevant economic, environmental and social perspectives. *Assessment Tool* *Issue Analysis: Alternatives and Consequences, AGR3010–1* *Sample Issues for Research, Analysis and Debate AGRSAM* *Standard* *Analyze five issues to a standard of 3 on the rating scale*	25
• compare and contrast issues that involve agriculture in Alberta and Canada with similar issues at a global level	• completing a research project that examines an agriculture issue of current significance in Alberta and/or Canada, and compares/relates that issue to similar issue(s) at the global level. *Assessment Tool* *Research Process: Local and Global Issues in Agriculture, AGR3010–2* *Standard* *Complete all components of research to a standard of 3 on the rating scale*	25

MODULE AGR3010: ISSUES IN AGRICULTURE (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• present a plan of action to address a complex issue in agriculture	• given an issue in agriculture that involves interaction among three or more different interest groups: – negotiating and debating the issue while assuming the role of one or more of the interest groups – preparing and presenting a position paper on the issue that outlines a responsible course of action. *Assessment Tool* *Negotiation and Debate: Advanced Level, AGRNEG–3* *Position Paper: Issues in Agriculture, AGR3010–3* *Standard* *Address criteria in negotiation/debate and the position paper to a standard of 3 on the rating scale*	50
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Issue Analysis	• identify a range of current social, economic and environmental issues in agriculture	Identify issues resulting from current practices in agriculture and food production; e.g.: • animal welfare • land/water use • world food distribution • sustainable production • biotechnology • genetic diversity • food safety standards.

MODULE AGR3010: ISSUES IN AGRICULTURE (continued)

Concept	Specific Learner Expectations	Notes
Issue Analysis (continued)	*The student should:* • list and categorize concerns being expressed regarding a social, economic and environmental issue in agriculture; e.g.: – environmental impacts – nutritional or food safety concerns – social, political or economic factors – ethical concerns	Discuss and provide a definition for "ethics." View *The Ethics Jungle* (a CTS video on ethics available from ACCESS).
	• critically analyze a current issue in agriculture; e.g.: – identify conflicts among different stakeholder groups – gather information relevant to different sides of the issue – consider the implications of adopting different alternatives.	Remind students that it is the "process" for issue analysis that is important, not particular positions that may be adopted.
The Global Context	• relate a local social, economic or environmental issue in agriculture to a similar issue at the global level	For case studies and teaching activities on issues in agriculture, obtain *Issues: An Integrated Approach to Sensitive Science and Society Issues* (see Section I: Student Learning Guide).
	• compare statements made by scientists, different interest groups and the media regarding the issue	Consider positions taken by: • producer/processor • environmentalist • animal welfare advocate • consumer • scientist • politician • business person.
	• describe costs and benefits associated with different approaches for dealing with the issue at local and global levels.	Explore potential for compromise and/or consensus among stakeholder groups.

Concept	Specific Learner Expectations	Notes
Action Plans	*The student should:* • prepare a position paper on a complex issue in agriculture; e.g.: – clarify the issue and identify related perspectives – develop a position and provide a rationale – outline a personal plan of action • participate in a debate of a complex issue in agriculture while assuming the role of one or more stakeholder groups; e.g.: – farmer – environmentalist – animal-welfare advocate – consumer – scientist.	Remember to focus attention on the "process" used to develop a position, rather than particular positions that may be adopted. Invite community members to participate in the debates and/or serve as moderators.

MODULE AGR3030: FIELD CROPS 2 (MANAGEMENT TECHNIQUES)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2030 Field Crops 1 (Materials & Processes)

Module Description: Students demonstrate the techniques used to produce a field crop, focusing attention on industry trends, enterprise selection, genetics and reproduction, and production skills. Potential areas of specialization include the production of cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, fruits, medicinal plants and exotic plants.

Module Parameters: Access to a land laboratory.

Facilities and equipment should permit students to perform practical skills in **two** areas of plant production; e.g., soil preparation, seeding/propagation, cultivation, irrigation, fertilizing, pest and disease control.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify trends in the production and use of new varieties of field crops	• completing a research project on trends in the production and use of new and/or different species/varieties of field crops. Research to focus attention on two or more field crop species/varieties, and address: – production and consumption trends within Alberta, Canada and the global community – factors that determine viability of the production enterprise. *Assessment Tool* *Research Process: Opportunities in Field Crop Production, AGR3030–1* *Standard* *Conduct research to a standard of 3 on the rating scale.*	20
• describe principles of genetics and reproduction, and explain their application to field crop species	• identify major components of a strategy used to maintain/improve the quality and productivity of a field crop species. Strategy to address: – principles of heredity – desirable and undesirable plant traits – selection criteria and procedures – applications of hybridization – standards for grading – current and emerging technologies. *Assessment Tool* *Assessment Criteria: Components of a Plant Breeding Strategy, AGR3030–2* *Standard* *Identify and explain all components of the strategy to a standard of 3 on the rating scale.*	30

MODULE AGR3030: FIELD CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate practical skills in producing a field crop	• demonstrating safe use of basic equipment and practical skills within two areas of crop production (in addition to those studied in AGR2030): – soil preparation – seeding/propagation – crop cultivation – irrigation – fertilizing – pest/weed/disease control – harvesting. *Assessment Tool* *Task Checklist: Field Crops 2, AGR3030–3* *Lab Assessment: Plant Production, AGRLAB–PLT* *Standard* *Achieve a minimum performance rating of:* *- 2 in applicable areas of crop production* *- 3 in the safe use of hand and power equipment*	50
	• maintaining an anecdotal record of production tasks performed in two areas of crop production. *Assessment Tool* *Log/Record of Production Tasks: Plants, AGRLOG–PLT* *Standard* *Completing all sections of the log/record for each production task performed over a negotiated/contracted period of time*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3030: FIELD CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Industry Trends and Viability	• research production and consumption patterns within Alberta, Canada and the global community	Construct/interpret graphs indicating production/consumption patterns over a period of time.
	• describe the impact of economic, environmental and social trends on production practices within the industry; e.g.: – international trade and global competition – trade liberalization – rural and urban populations – food safety and consumer confidence – consumer demands – support for research and development – environmental stewardship and sustainable development	Consider the impacts of local, national and global trends on industry practices. Plan for individual/group research projects and presentations.
	• identify market factors that influence crop selection; e.g.: – market demands – market size, location and access – market competition – market trends	Ask students to predict future production practices and give reasons for their predictions.
	• describe financial opportunities related to crop production; e.g.: – fixed and variable costs – forecast of returns – risk factors – income stabilization programs	Invite a rural development specialist to discuss enterprise selection. Research the role of advertising and promotion in accessing markets.
	• describe land requirements, and the suitability of soil and water conditions to production operations	
	• describe the suitability of Alberta's climate to potential crops; e.g.: – growing days – frost-free days – ambient temperature – soil temperature	Identify input costs and potential profits for a production venture.
	• describe ways in which government regulations, policies and guidelines may influence production	Identify determinants of regional commodity production.
	• predict future production on the basis of current issues and trends.	

MODULE AGR3030: FIELD CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
Genetics and Reproduction	*The student should:* • classify field plants; e.g.: – according to growth habit – according to taxonomy • identify field plants, e.g.: – using common names – using botanical nomenclature • research heredity principles and their application to plants that are grown; e.g.: – dominant and recessive traits – selection criteria and procedures – systems of breeding • research reproduction technologies and their application to plants that are grown; e.g.: – propagation techniques – genetic engineering • describe procedures used to maintain the quality of plants within the industry; e.g.: – selection criteria and regulations – showing and judging – grading systems and standards – record keeping and record systems.	Gather, label and mount collections of plants. Use an identification key to identify previously unknown plants. Visit an agriculture research station. Compare "common" and "certified" seed systems. Conduct breeding experiments with cucumbers, squash, pumpkins and/or gourds.
Production Skills	• perform basic field crop production activities; e.g.: – soil preparation – seeding/propagation – crop cultivation – irrigation/fertilization – pest/weed/disease control – harvesting • apply knowledge of plant management practices; e.g.: – characteristics of plant health and disorders – remedial strategies for plant disorders – disease and pest control – plant growth management	Potential linkages exist with the Alberta Agriculture Green Certificate Training Program: • crop production • irrigated crop production. For further information, see Section H: Linkages/Transitions.

MODULE AGR3030: FIELD CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	*The student should:* • demonstrate techniques for maintaining sustainable use of natural resources; e.g.: – management practices related to soil fertility and conservation – management practices related to water quality and the hydrologic cycle • explain concerns regarding plant management practices and sustainable production systems; e.g.: – soil, water and air quality – organic and inorganic amendments – biological and chemical control measures – effluent disposal and pollution – food safety and consumer confidence • explain relevant legislation and policy through production management activities; e.g.: – environmental constraints – inspection, regulation and quality control.	Consider strategies for managing a crop from seed to sale. Develop/implement a crop rotation plan. Plan for individual research regarding relevant issues. Keep a daily log that details production activities. Conduct research on biological control agents.

MODULE AGR3040: LIVESTOCK/POULTRY 2 (MANAGEMENT TECHNIQUES)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2040 Livestock/Poultry 1 (Materials & Processes)

Module Description: Students demonstrate the techniques used to manage production of livestock, poultry or other animal commodities, focusing attention on industry trends and opportunities, genetics and reproduction, rations and feeding, housing, animal handling and restraint, animal health and welfare, breeding operations and care for the young. Potential areas of specialization include the production of beef, dairy, poultry, swine, sheep, game, exotics and bees and/or the study of aquaculture.

Module Parameters: Access to livestock, poultry or specialty animals and to appropriate animal housing and fencing structures.

Off-campus learning can support the development of practical skills in animal production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices)

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to animal production. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify industry trends in beef, dairy, sheep, swine, poultry or specialty animal production	• completing a research project on trends in the animal production industry. Research to address: – animal production and consumption patterns within Alberta, Canada and the global community – factors that determine the viability of a specific production enterprise. *Assessment Tool* *Research Process: Trends in Animal Production, AGR3040–1* *Standard* *Conduct research to a standard of 3 on the rating scale.*	20
• describe principles of genetics and reproduction, and explain their application to cattle (beef or dairy), sheep, swine, poultry or specialty animals	• identify major components of a breeding strategy used for a particular beef, dairy, sheep, swine, poultry or specialty animal. Components to include: – dominant and recessive traits – selection criteria and procedures – inbreeding, linebreeding and crossbreeding – standards of animal performance – the reproductive process and related technology – systems for maintaining/improving animal quality and productivity. *Assessment Tool* *Assessment Criteria: Components of an Animal Breeding Strategy, AGR3040–2* *Standard* *Identify and explain all components of the strategy to a standard of 3 on the rating scale*	20

MODULE AGR3040: LIVESTOCK/POULTRY 2 (MANAGEMENT TECHNIQUES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate practical skills in raising, growing and finishing cattle (beef or dairy), sheep, swine, poultry or specialty animals	• demonstrating practical skills within each of the following areas of animal production: – feeding – housing – handling and restraint – health and welfare – breeding operations – care for young. Production tasks will involve the application of appropriate safety guidelines for animal husbandry. *Assessment Tool* *Task Checklist: Livestock/Poultry 2, AGR3040–3* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in all areas of task and lab assessment*	60
	• maintaining an anecdotal record of all production tasks performed. *Assessment Tool* *Log/Record of Animal Care, AGRLOG–ANM* *Standard* *Completing all sections of the log/record for animal care tasks performed over a negotiated/contracted period of time.*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3040: LIVESTOCK/POULTRY 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Industry Trends and Viability	• research production and consumption patterns within Alberta, Canada and the global community	Attend local farm fairs and exhibitions.
	• explain the impact of economic, environmental and social trends on production practices within the industry; e.g.: – international trade and global competition – trade liberalization – rural and urban populations – food safety and consumer confidence – consumer preferences – support for research and development – environmental stewardship and sustainable development	Construct/interpret graphs indicating production/ consumption patterns over a period of time. Consider the impacts of local, national and global trends on industry practices. Plan for individual/group research projects and presentations.
	• identify market factors that influence enterprise selection; e.g.: – market demands and trends – market size, location and access – market competition	Ask students to make predictions regarding future production practices and give reasons for their predictions.
	• compare financial opportunities related to animal production; e.g.: – fixed and variable costs – forecast of returns – risk factors – income stabilization programs	Identify input costs and potential profits for a production venture. Invite a rural development specialist to discuss enterprise selection.
	• describe ways in which government regulations, policies and guidelines may influence production	
	• describe land requirements, and the suitability of soil, water and climatic conditions to production operations	Identify determinants of regional commodity production.
	• describe other needs relative to production activities; e.g.: – structures and equipment – labour – transportation	
	• predict future production on the basis of current issues and trends.	

MODULE AGR3040: LIVESTOCK/POULTRY 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Genetics and Reproduction	• research heredity principles and their application to animals that are raised; e.g.: – dominant and recessive traits – selection criteria and procedures – systems of breeding	Identify desirable traits of specific animals and related heredity principles.
	• apply knowledge of specific reproduction processes; e.g.: – estrous cycle – gestation period – natural service/artificial insemination – normal birth process – age criteria for breeding	Invite a local veterinarian to explain selection and breeding systems. Access the Western Breeder's A.I. truck.
	• research reproduction technologies and their application to animals that are raised; e.g.: – embryo transfer – gender selection	Discuss the importance of maintaining breeding records.
	• describe procedures used to manage the quality of animals within the industry; e.g.: – selection criteria and regulations – pedigrees and performance information – showing/judging systems and standards – registry and record systems.	Examine registration and transfer forms. Organize a judging competition on a specific animal breed.
Production Skills	• perform basic animal production activities; e.g.: – feeding – housing – handling and restraint – health and welfare – breeding operations – caring for young • describe approved methods of marking or tagging animals for identification	Consider strategies for managing livestock from birth to market. Discuss growth and development patterns in relation to the age of an animal. Keep a daily log that details production activities. Research food sources and additives. Discuss animal stress in relation to animal confinement. Describe symptoms of common diseases.

Concept	Specific Learner Expectations	Notes
	The student should:	
Production Skills (continued)	• identify and apply appropriate strategies for maintaining sustainable use of natural resources; e.g.: – management practices related to soil fertility and conservation – management practices related to water quality and the hydrologic cycle	Potential linkages exist with the Alberta Agriculture Green Certificate Farm Training Program: • beef • dairy • sheep • swine. For additional information, see Section H: Linkages/ Transitions.
	• explain concerns regarding animal management and sustainable production systems; e.g.: – biotechnology – food safety – animal rights – pollution	Plan for individual research regarding relevant issues. Research criteria for the Outstanding Environmental Stewardship Award; invite local nominees.
	• explain relevant legislation and policy through production management activities; e.g.: – environmental health and safety – personal health and safety.	Research legal considerations related to animal housing.

MODULE AGR3050: AGRIFOODS 2 (STANDARDS & REGULATION)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2050 Agrifoods 1 (Materials & Processes)

Module Description: Students demonstrate knowledge of the techniques used to manage the development of an agrifood product or related service, focusing attention on government regulation and control, economic principles, product quality and safety, environmental impact and industry trends. Potential areas of investigation include dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruits/vegetables and honey.

Note: It is recommended that this module provide further investigation of the agrifood industry examined in AGR2050 Agrifoods 1.

Module Parameters: Access to an agrifoods industry.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify government legislation and policies that regulate practices within an agrifood industry	*Assessment of student achievement should be based on:* • given a specific agrifood industry, identifying and describing: – the roles of federal, provincial and local government agencies responsible for product quality, worker safety and environmental impact within the industry – examples of government policy and/or legislation relevant to the industry that regulate: • inspection of raw materials • product grading, packaging and labelling • sanitation standards • worker safety • environmental impact. *Assessment Tool* *Knowledge/Application Assessment: Government Policy and Legislation, AGR3050–1* *Standard* *Respond to a standard of 3 on the rating scale*	30

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MODULE AGR3050: AGRIFOODS 2 (STANDARDS & REGULATION) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe techniques used to manage industry practices, including the application of economic principles, product quality and safety, and environmental impact	• preparing and presenting an oral, written and/or multi-media report describing specific management practices adopted by an agrifood industry to comply with government policy and regulation. *Assessment Tool* *Presentations/Reports: Management Practices in Agrifoods, AGR3050–2* *Standard* *Prepare and present the report to a standard of 3 on the rating scale*	30
• identify industry trends and opportunities for developing new agrifood products	• completing a research project on trends and opportunities within an agrifood industry. Research to address: – production and consumption patterns within Alberta, Canada and the global community – factors that determine the viability of a specific agrifood industry – opportunities for product research and development within the industry. *Assessment Tool* *Research Process: Industry Trends in Agrifoods, AGR3050–3* *Standard* *Complete all components of research to a standard of 3 on the rating scale*	40
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3050: AGRIFOODS 2 (STANDARDS & REGULATION) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Government Regulations	• explain the role of government legislation in maintaining product quality and safety within an agrifood industry; e.g.: – inspection of raw materials – product grading – packaging and labelling – sanitation standards – safety regulations	Discuss legal definitions and standards for the processed product.
	• describe the mandates of specific government agencies in maintaining product quality and safety; e.g.: – Agriculture Canada – Alberta Agriculture, Food and Rural Development – Consumer and Corporate Affairs – Health and Welfare Canada	Investigate worker safety concerns and related legislation.
	• describe potential applications of the International Standards Organization (ISO) in regulating industry practices	
	• describe the mandates of specific government agencies regarding industry use of land, water and air; e.g.: – Alberta Environmental Protection – Environment Canada.	
Management Functions	• apply knowledge of basic economic principles to management decisions within the industry; e.g.: – supply and demand – law of diminishing returns – comparative advantage	Discuss quality control on incoming product/ materials. Research applications of "Hazard Analysis at Critical Control Points" (HACCP).
	• identify criteria and techniques for assuring the quality of a commodity or value-added product through processing, transportation and storage; e.g.: – parameters of quality – inspection and grading – quality control systems	Identify grading and labelling requirements. For information on quality control in cheese production, view the video entitled *On the Line* (see Section I: Learning Resource Guide).

MODULE AGR3050: AGRIFOODS 2 (STANDARDS & REGULATION) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Management Functions (continued)	• identify criteria and techniques for managing environmental impact; e.g.: – methods of effluent disposal – water treatment after use – soil conservation practices – use of biodegradable materials	Research impacts of: • milk board system • pork marketing board • egg/poultry marketing boards • Canadian Wheat Board • Honey Producers Cooperative.
	• explain how relevant supply systems may influence industry management; e.g.: – supply of raw materials – production volumes – access to market	Plan for individual research regarding relevant issues.
	• describe current issues regarding food quality and sustainable processing systems; e.g.: – food additives, preservatives and irradiation – use of organic and inorganic materials – effluent disposal and pollution.	
Industry Trends	• describe production and consumption patterns within Alberta, Canada and the global community	Construct/interpret graphs indicating production/ consumption patterns over a period of time.
	• describe the impact of economic, environmental and social trends on practices within the industry; e.g.: – international trade and global competition – trade liberalization – rural and urban populations – food safety and consumer confidence – consumer preferences – support for research and development – environmental stewardship and sustainable development	Consider the impacts of local, national and global trends on industry practices.
	• describe opportunities for product research and development within the industry; e.g.: – altering existing products – developing new products – developing new markets	Plan for individual/group research projects and presentations.
	• predict future production on the basis of current trends and issues.	Ask students to predict future production techniques and products, giving reasons for their predictions.

MODULE AGR3060: LANDSCAPE/TURF MANAGEMENT 2 (INSTALLATION & REPAIR)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2060 Landscape/Turf Management 1 (Maintenance Practices)

Module Description: Students demonstrate the techniques used to provide landscape and turf management services, focusing attention on plant identification, effective maintenance practices, diagnosis and correction of problems, installation of specialty items, cost analysis and seasonal estimates. Potential areas of specialization include home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds and roadside landscapes.

Module Parameters: Access to residential, recreational, institutional/industrial and/or roadside landscapes.

Facilities and equipment should permit students to perform practical tasks in landscape management, including the analysis of turfgrass problems and the planning/installation of specialty items.

Instructor training in first aid and in the use of pesticides is recommended; e.g., Standard First Aid, Pesticide Applicator/Dispenser Certificate.

Off-campus learning can support the development of practical skills in landscape/turf management; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to landscape/turf management. See Planning for Instruction in Section C for further information on student safety.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify plants suitable for use in Alberta landscapes	• given access to on-site (or photographed) tree, shrub, ground cover, flower and turfgrass species/varieties used in Alberta landscapes, identifying selected specimens according to: – common and botanical names – general characteristics/growth habits – functional use in Alberta landscapes. *Assessment Tool* *Identification Guide: Landscape Plants, AGRIDE–LDS* *Information Sheet: Landscape Plants, AGRINF–LDS* *Standard* *Identify 10 landscape plants (including tree, shrub, ground cover, flower and turfgrass specimens) in addition to those identified in AGR1070 and AGR2060*	20
	• given access to on-site (or photographed) weed species found in Alberta landscapes and turfgrasses, identifying selected specimens according to: – common name – growth habit – management technique. *Assessment Tool* *Identification Guide: Landscape/Turfgrass Weeds, AGRIDE–WED* *Information Sheet: Landscape/Turfgrass Weeds, AGRINF–WED* *Standard* *Identify 5 common weeds (found in Alberta landscapes and/or turfgrasses) in addition to those identified in AGR1070 and AGR2060*	

MODULE AGR3060: LANDSCAPE/TURF MANAGEMENT 2 (INSTALLATION & REPAIR)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate practical skills in installing, maintaining and managing landscape plants and turfgrass	*Assessment of student achievement should be based on:* • performing landscape/turfgrass installation and maintenance services within each of the following areas: – planting and transplanting – turfgrass establishment – analysis of turfgrass problems and corrective measures – pruning of fruit trees, hedges and specialty plants – fertilizer calculation and application to landscaped/turfed areas – winterizing of trees, shrubs, perennials and turfgrasses. Installation and maintenance services will involve the application of appropriate safety guidelines for using hand and power equipment. *Assessment Tool* *Task Checklist: Landscape/Turf Management 2, AGR3060–1* *Lab Assessment: Landscape and Turf Care, AGRLAB–LDS* *Standard* *Achieve a minimum performance rating of:* *– 2 in installation and maintenance services* *– 3 in the use of hand and power equipment* • maintaining an anecdotal record of all landscape/turfgrass services performed *Assessment Tool* *Log/Record of Landscape/Turfgrass Services, AGRLOG–LDS* *Standard* *Completing all sections of the log/record for each service performed*	50

MODULE AGR3060: LANDSCAPE/TURF MANAGEMENT 2 (INSTALLATION & REPAIR)
(continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• develop and present a plan for the installation of a specialty item and/or system within an Alberta landscape	• preparing a proposal for the installation of one specialty item and/or system within an Alberta landscape. The proposal will provide: – an explanation of need – a description of component parts – a plan for installation – an estimated total cost. *Assessment Tool* *Proposal: Installation of Specialty Items/Systems, AGR3060–2* *Standard* *Accurately complete the proposal to a standard of 3 on the rating scale*	20
• estimate the cost of providing seasonal landscape and/or turfgrass services	• preparing a simple cost analysis and estimate for providing a "seasonal" landscape/ turfgrass service. *Assessment Tool* Landscaping Principles and Practices *(Unit 25: Pricing Landscape Maintenance)* *Standard* *Accurately complete a cost analysis and estimate for providing one seasonal service*	10
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3060: LANDSCAPE/TURF MANAGEMENT 2 (INSTALLATION & REPAIR)
(continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Plant Identification	• describe methods of classifying landscape plants; e.g.: – common and botanical names – general characteristics/growth habits – functional use	Identify 10 or more landscape plants on-site (in addition to those identified in AGR1070 and AGR2060).
	• describe methods of identifying landscape plants; e.g.: – using common names – using botanical nomenclature	Collect/mount a weed display.
	• explain the use of taxonomy keys in plant identification	Use an identification key to identify previously unknown plants.
	• identify and select appropriate trees, shrubs and ground covers for given applications in Alberta landscapes; e.g.: – herbaceous and woody – evergreen and deciduous	Choose and plant bare root, ball and burlap, and container-grown stock.
	• identify and select appropriate flowers for given applications in Alberta landscapes; e.g.: – annual, biennial and perennial – bulbs, tubers and rhizomes	Identify specialty plants, including bulbs, corms, tubers and fleshy roots.
	• identify and select appropriate turfgrasses for given applications in Alberta landscapes; e.g.: – rhizome producing, stolon producing and bunch type – fine, medium and course leaf texture.	Relate anatomy of turfgrass to appropriate management practices. Distinguish between single species turf plantings and grasses that are mixtures or blends.

MODULE AGR3060: LANDSCAPE/TURF MANAGEMENT 2 (INSTALLATION & REPAIR) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Installation/ Maintenance Tasks	• demonstrate proper planting and/or transplanting techniques for landscape plants; e.g.: – handling of plant materials – preparing the growing media and seed bed – installing plants and turf – staking and guying the plants	Perform general landscape and turf maintenance services. Keep a daily log that details maintenance services performed.
	• demonstrate proper techniques for preparing turfgrasses in the spring season; e.g.: – clean-up – dethatching – first cutting – patching the lawn – aeration and top dressing – fertilizing	Demonstrate proper use of core aerator and power rake. Calculate basic fertilizer requirements for turfed areas.
	• describe and correct turfgrass problems; e.g.: – fairy ring – scalping – ridging – compacting – insect, animal and disease problems	Potential linkages exist with various pesticide applicator/dispenser certificate courses (see Section H: Linkages/ Transitions).
	• demonstrate appropriate techniques for pruning fruit trees	Demonstrate corrective pruning on trees and shrubs: • thinning, heading back, jump cuts • hedge shearing • pruning conifers.
	• demonstrate or describe appropriate practices for shaping trees and shrubs; e.g.: – hedge shearing – espalier – topiary	
	• identify types of winter damage to landscape plants and ways to recover from winter injury; e.g.: – windburn and sunscald – temperature extremes – ground heaving – damage owing to ice, snow and salt – snowplow and vehicle damage.	Explain winterizing techniques for trees, shrubs and turf.

MODULE AGR3060: LANDSCAPE/TURF MANAGEMENT 2 (INSTALLATION & REPAIR)
(continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Specialty Items and Systems	• identify different types of specialty items and/or systems found in Alberta landscapes; e.g.: – underground sprinkling – hedging and screening – hillside planting – ponds – paving systems – retaining walls – landscape lighting • explain local regulations that may influence the selection, design and/or installation of a specialty item or system; e.g.: – land planning and zoning – use of equipment or chemical – environmental constraints • plan and cost one specialty item and/or system for an Alberta landscape; e.g.: – explanation of need – description of component parts – plan for installation – estimated total cost.	
Seasonal Estimates	• identify factors that determine the seasonal cost of providing a landscape/turfgrass service; e.g.: – material costs – labour costs – equipment usage costs – overhead costs • prepare seasonal cost analyses for basic landscape/turfgrass services.	Consider daily work ethic in assessing landscape services performed: • attendance • punctuality • use of time • group skills/attitudes • respect for property • clean-up.

MODULE AGR3070: EQUINE 2 (MANAGEMENT TECHNIQUES)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2070 Equine 1 (Materials & Processes)

Module Description: Students demonstrate practical skills and approved practices in providing for the daily care of a horse, focusing attention on the use of physical facilities, procedures for stall cleaning and bedding a horse, guidelines for turnout and shelter, reproductive fundamentals and techniques, and basic horsemanship.

Module Parameters: Access to a horse and appropriate equine housing/fencing structures.

Off-campus learning is required to support the development of practical skills in the care of horses and in horsemanship; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

It is recommended that students have a minimum of 50 hours of previous experience in horse handling and horse care prior to commencing the study of AGR2070 Equine 1 and AGR3070 Equine 2.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: Learner expectations in AGR2070 Equine 1 and AGR3070 Equine 2 are introductory to competencies developed in the two-year Equine Science Diploma Program at Olds College, Alberta. Opportunities for recognition of prior learning may be considered upon admission to this post-secondary program.

Supporting Module: CTR2210 Workplace Safety (Practices) [Career Transitions Strand]

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to the care of horses. See Planning for Instruction in Section C for further information on student safety.

MODULE AGR3070: EQUINE 2 (MANAGEMENT TECHNIQUES) (continued)

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify factors to consider in selecting a stable and other physical facilities	• completing a research project that examines desirable features of a stable and other physical facilities. Research to address selection criteria for: – stalls – interior ancillary facilities – feeding and watering equipment – waste management systems – fencing structures. *Assessment Tool* *Research Process: Selection Criteria for Stables and Physical Facilities, AGR3070–1* *Standard* *Complete all components of research to a standard of 3 on the rating scale*	15
• demonstrate practical skills and approved procedures for stall cleaning, bedding a horse, turnout and shelter	• demonstrating practical skills and approved procedures within each of the following areas of daily horse care: – cleaning a stall – bedding a horse – turnout and shelter. *Assessment Tool* *Task Checklist: Equine 2, AGR3070–2* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in each area of task and lab assessment*	35
	• maintaining an anecdotal record of daily horse care tasks performed. *Assessment Tool* *Log/Record of Animal Care, AGRLOG–ANM* *Standard* *Complete all sections of the log/record for daily horse care tasks performed over a negotiated/contracted period of time*	

MODULE AGR3070: EQUINE 2 (MANAGEMENT TECHNIQUES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe the reproductive cycle of horses, and describe basic techniques of equine reproduction	• given access to information concerning the estrus cycle of horses and procedures for achieving pregnancy in equine, a presentation or report (oral, written or visual) that describes and explains: – the estrus cycle and signs of estrus – methods of preparing the mare and stallion for breeding – appropriate care and handling of mare and stallion during the breeding season. *Assessment Tool* *Presentations/Reports: Advanced Level, AGRPRE–3* *Standard* *Complete the presentation or report to a standard of 3 on the rating scale*	15
• demonstrate approved horsemanship techniques	• demonstrating approved horsemanship techniques through the effective use of: – natural aids, including hands, seat and legs – artificial aids – the independent seat – rider psychology – selected bits and bitting devices. *Assessment Tool* *Task Checklist: Equine 2, AGR3070–2* *Lab Assessment: Animal Care, AGRLAB–ANM* *Standard* *Achieve a minimum performance rating of 2 in each area of task and lab assessment*	35
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3070: EQUINE 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Physical Facilities	• describe the use of stables and other confinement structures used in caring for equine; e.g.: – fences and shelters – totally confined rearing structures	Collect pictures of appropriate horse shelters for specific applications.
	• describe criteria relevant to the selection and/or design of structures and equipment; e.g.: – function, operation and maintenance – safety and efficiency – ethical, legal and environmental factors – economics and cost	Design/construct models of approved structures and equipment.
	• identify specific factors to consider in selecting: – a stall – type of flooring – interior ancillary facilities	
	• describe selection criteria relevant to watering and feeding systems	Discuss watering and feeding equipment and efficient locations.
	• describe approved waste management systems • describe factors to consider in selecting an appropriate type of fencing	Research and construct models of fences, gates, corrals, watering/feeding systems, etc., suited to equine.
	• identify policy, legislation and safe practices relevant to the use of physical structures and equipment.	
Stall Cleaning, Bedding, Turnout and Shelter	• describe the characteristics of a healthful environment for horses; e.g.: – sanitation – housing – pest control – exercise	Discuss health indicators for equine: • physical signs • normal vital signs • behaviour.
	• identify agents and sources of stress for a horse, and their effects on general health	Consider animal stress in relation to animal confinement.
	• describe veterinary services that are available, and the protocol for accessing these services	Research symptoms of common diseases requiring veterinary care.

Concept	Specific Learner Expectations	Notes
Stall Cleaning, Bedding, Turnout and Shelter (continued)	*The student should:* • demonstrate appropriate procedures for cleaning and disinfecting stalls • demonstrate appropriate procedures for bedding a horse	Establish task checklists and a chore log for stall cleaning and equine bedding routines.
	• demonstrate appropriate procedures for turnout and shelter.	Plan and implement a daily equine exercise program.
Reproductive Cycle and Techniques	• explain reproductive processes characteristic of equine; e.g.: – estrus cycle – gestation period – natural service/artificial insemination – normal birth process – age criteria for breeding	Discuss reproductive anatomy of the mare and stallion. Consider different breeding systems: • pasture breeding • hand breeding • artificial insemination.
	• identify the signs of estrus in a mare	Discuss variations in the estrus cycle and their management.
	• describe methods of preparing a mare and stallion for breeding; e.g.: – teasing protocol – hormone treatments – artificial light • describe appropriate procedures for the care and handling of mare and stallion during the breeding season	Identify factors affecting response to teasing; e.g.: • age • temperament • handling procedures • weather • health.
	• explain reproductive technologies that are used in equine breeding; e.g.: – artificial insemination – embryo transfer – estrus manipulation – gender selection.	Invite/visit a local veterinarian to discuss selection and breeding systems.

MODULE AGR3070: EQUINE 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Horsemanship Techniques	• demonstrate active and passive use of hands in riding; e.g.: – acting – yielding – holding – following	Refer to *The Complete Guide to Western Horsemanship* (J. P. Forget) for a comprehensive account of basic horsemanship techniques.
	• demonstrate active and passive use of the seat in riding; e.g.: – at the walk – at the trot – at the lope	Discuss the appropriate use of reins in negotiating various manoeuvres; e.g.: • open rein • direct rein of opposition • neck rein • indirect rein of opposition.
	• demonstrate active and passive use of legs in riding; e.g.: – acting – yielding – following leg	Explain the effect of lateral seat aids. Discuss strategies for using the human voice as a natural training aid.
	• demonstrate appropriate use of artificial aids in reinforcing natural riding aids; e.g.: – riding crop – spurs	Plan and implement an equine training program.
	• display stability and balance while riding by maintaining an independent seat	Establish a personal training routine for developing an independent seat; e.g.: • exercises on horseback • physical conditioning.
	• explain the use of psychology in achieving personal riding goals; e.g.: – focusing – imagery – self-talk	Discuss personal attributes of a successful rider. Establish short- and long-term performance goals, and a list of tasks that will assist in achieving each goal.
	• demonstrate appropriate use of selected bits in communicating with a horse; e.g.: – snaffle bits – curb bits	Research the anatomy of a horse's mouth and the mechanics of bits and bitting.

MODULE AGR3070: EQUINE 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Horsemanship Techniques (continued)	• explain applications of various bitting devices in the training of horses; e.g.: – draw reins – German martingale – running martingale – standing martingale – cavesson.	Discuss care of the horse's mouth and teeth as it relates to the prevention of bitting problems. Discuss key principles for selecting bits and progressing from snaffles to curbs.

MODULE AGR3080: FLORAL DESIGN 2 (CREATIVE DESIGN & DISPLAY)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2080 Floral Design 1 (Projects for All Occasions)

Module Description: Students demonstrate knowledge of the practices involved in providing creative floral design services, focusing attention on plant and flower identification, more advanced design techniques, floral services for special occasions and promotional displays of floral services offered.

Module Parameters: Access to a plant potting/flower arrangement room with refrigeration, a source of water, adequate storage facilities and workbenches/table surfaces for flower arranging.

Instructor training in floral design; e.g., Flowers Canada Accreditation Program, and/or relevant industry experience is an asset.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • identify and explain the cultural requirements of cut flowers, foliage and interior plants	*Assessment of student achievement should be based on:* • given access to on-site (or photographed) cut flowers, foliage and interior plants used in the floral industry, identifying selected specimens by: – common and botanical names – basic characteristics and general use. *Assessment Tool* *Identification Guide: Cut Flowers and Interior Plants, AGRIDE–FLO* *Information Sheet: Cut Flowers and Interior Plants, AGRINF–FLO* *Standard* *Identify 10 cut flowers and/or foliage specimens and 5 interior plants; species identified must be in addition to those identified in AGR1080 and AGR2080*	20

MODULE AGR3080: FLORAL DESIGN 2 (CREATIVE DESIGN & DISPLAY) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• construct fresh, dried and/or artificial floral arrangements for special occasions	• constructing six or more fresh, dried and/or artificial floral arrangements for special occasions as identified in *Task Checklist: Floral Design 2*. Each arrangement to illustrate the application of design principles outlined in *Product Assessment: Floral Design 2*. *Assessment Tool* *Developmental Framework: Floral Construction, AGRDEV–FLO* *Task Checklist: Floral Design 2, AGR3080–1* *Product Assessment: Floral Design 2, AGR3080-2* *Lab Assessment: Floral Design, AGRLAB–FLO* *Project Planning: Floral Design, AGRPLN–FLO* *Standard* *Achieve a minimum rating of 3 in product assessment and 3 in lab assessment for each arrangement*	40
• calculate the cost and selling price of floral products and services	• calculating the cost and selling price for fresh, dried and/or artificial floral arrangements constructed. *Assessment Tool* *Pricing Worksheet: Floral Services, AGRPRI-FLO* *Standard* *Accurately complete all sections of the pricing worksheet for each of six arrangements constructed*	10
• demonstrate techniques used to promote products and services within the floral industry	• design, construct and maintain a promotional display for a seasonal product and/or service within the floral industry. *Assessment Tool* *Task Checklist: Promotional Displays, AGR3080–3* *Standard* *Perform all tasks to a standard of 2 on the rating scale*	30

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MODULE AGR3080: FLORAL DESIGN 2 (CREATIVE DESIGN & DISPLAY) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • demonstrate basic competencies.	*Assessment of student achievement should be based on:* • observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Plant and Flower Identification	*The student should:* • identify cut flowers and greenery commonly used in floral design; e.g.: – greenhouse/fieldgrown cut flowers – imported cut flowers – foliage and filler • identify interior plants and gift plants; e.g.: – tropical flowering and foliage plants – flowering bulbs • identify dried and artificial materials commonly used in floral design; e.g.: – dried flowers and foliage – silk and other fabric materials • relate different growth styles of flowers to their use in floral arrangements • explain the advantage and disadvantages of using different types of floral materials • explain ethnic and cultural influences on floral materials and practices.	Subscribe to the *Florists' Review* (a monthly periodical). Arrange a visit to a local florist shop. Flower and plant identification guides used by industry are available from: • United Floral Growers (Burnaby) • Holland Flower Council. Identify: • 10 or more different cut flowers and/or foliage specimens • five or more interior plants and/or gift plants. Species identified should be in addition to those identified in AGR1080 and AGR2080.

Concept	Specific Learner Expectations	Notes
	The student should:	
Design and Construction	• explain and apply elements and principles of design; e.g.: – line, form, pattern and texture – colour, balance and rhythm – scale and proportion – harmony, contrast and repetition	**CAUTION:** **Review safety practices prior to practical activities.** Industry resources produced by Redbook Floral Services and available through the Olds College Bookstore include: • Basic Floral Design • Advanced Floral Design • Care and Handling of Fresh Flowers and Foliages.
	• apply the colour wheel and basic colour theory	
	• spray tint and/or dip dye fresh and dried floral products as necessary to achieve special effects	
	• demonstrate advanced design techniques; e.g.: – crescent – hogarth curve – T-shape – L-shape	Construct arrangements that illustrate principles of: • rhythm and harmony • depth and line • texture • focal emphasis. Discuss terms/techniques of design: • pave • binding • grouping • clustering • layering.
	• design and construct fresh, dried and/or artificial floral arrangements for special purposes and occasions; e.g.: – calendar events – weddings – funerals – hospitals.	Arrange for students to gain job/productivity skills through work experience. Students need to experience their perceived skills in a work setting. Contact your local Flowers Canada Accreditation Council regional liaison member for information on instructor workshops (see Section H: Linkages/Transitions).

MODULE AGR3080: FLORAL DESIGN 2 (CREATIVE DESIGN & DISPLAY) (continued)

Concept	Specific Learner Expectations	Notes
Cost and Selling Price	*The student should:* • identify fixed and variable costs associated with floral services • explain and apply pricing formulas used in the floral industry • calculate the cost price and selling price of a floral arrangement • explain the importance of accountability for pricing practices used within the industry.	Distinguish between the concepts of wholesale and retail. Calculate the cost and selling price for a variety of floral products and services.
Promotional Techniques	• identify important components of promotional displays • establish a theme and goals for a floral display that promotes/advertises a seasonal product and/or service • design and construct a promotional floral display that promotes/advertises a seasonal product and/or service • design and maintain a promotional display for a specified period of time • disassemble and remove a promotional floral display.	

MODULE AGR3090: MARKETING 2 (CLOSED MARKETING STRUCTURES)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2090 Marketing 1 (Open Marketing Structures)

Module Description: Students explain specialized applications of marketing within closed (supply managed) marketing structures, focusing attention on regulatory agencies/policies that influence the supply of a commodity, product or service.

Module Parameters: Access to an agriculture or horticulture industry.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe general characteristics and applications of marketing within a closed (supply managed) marketing structure	*Assessment of student achievement should be based on:* • completing a research project on strategies used to market an agriculture commodity within a closed marketing structure. Research to address: – social, economic and environmental factors that influence market trends – a rationale for "supply management" within the industry – specific marketing structures/agencies/policies that regulate commodity supply and exchange – influence of government policies/legislation on marketing activities – a comparison of approaches used to market the commodity in Canada with other nations – forecasts regarding future exchange and marketing of the commodity. *Assessment Tool* *Research Process: Specialized Applications of Marketing, AGR3090–1* *Standard* *Complete all components of research to a standard of 3 on the rating scale*	25

MODULE AGR3090: MARKETING 2 (CLOSED MARKETING STRUCTURES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• assess the benefits and costs of open (free enterprise) and closed (supply managed) marketing systems	• given a current issue regarding applications of open and/or closed marketing within an agriculture industry: – negotiating and debating the benefits/costs of a specific marketing strategy while assuming the role of producer and consumer – preparing and presenting short position paper on the issue that states and defends a preferred marketing alternative. *Assessment Tool* *Negotiation and Debate: Advanced Level, AGRNEG–3* *Presentations/Reports: Advanced Level, , AGRPRE–3* *Standard* *Address criteria in negotiation/debate and the position paper to a standard of 3 on the rating scale*	25
• explain factors that affect decisions to produce and market an agriculture commodity within a closed (supply managed) marketing structure	• develop plans to produce and market an agriculture commodity within a closed system. Venture plan to include analysis of six or more factors that affect decisions to produce and market the commodity, such as: – supply, quality and/or pricing – current market information – transportation requirements – time constraints on perishable products – international and domestic trade rules – income support programs and subsidies. *Assessment Tool* *Assessment Criteria: Venture Plans, AGR3090–2* *Standard* *Develop venture plans to a standard of 2 on the rating scale*	50
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3090: MARKETING 2 (CLOSED MARKETING STRUCTURES) (continued)

Concept	Specific Learner Expectations	Notes
Past and Present Trends	*The student should:* • describe past and present trends in the regulated marketing of an agricultural commodity, product or service • describe factors that have affected marketing practices within the industry; e.g.: – consumer trends – trade liberalization – globalization of markets – environmental concerns – subsidy polices • compare approaches used to market the commodity, product or service in Canada with approaches used in other nations; e.g.: – United States – nations of the Pacific Rim – Europe.	This module will enable students to study the characteristics/functions of supply-managed marketing structures specifically designed for: • a primary commodity OR • a processed product OR • a related service.
Structures and Policies	• identify economic factors that affect marketing activities within the industry; e.g.: – law of supply and demand – price determination and the futures market – comparative advantage • explain the concept of supply management, and differences between nonregulated (open) and regulated (closed) marketing systems • explain the role and impact of regulatory systems and strategies used in marketing the commodity, product or service; e.g.: – marketing boards and cooperatives – quota systems and monopolies • identify marketing structures used to facilitate commodity exchange; e.g.: – Winnipeg Commodity Exchange – Omaha Market Exchange – Chicago Grain Exchange	Research steps in "hedging."

Concept	Specific Learner Expectations	Notes
	The student should:	
Structures and Policies (continued)	• describe the impact of government policies and legislation on marketing activities within the industry; e.g.: – federal, provincial and international trade agreements – transportation policies – non-trade (health and safety) standards	Research influences of: • GATT (General Agreement on Tariffs and Trade) • NAFTA (North American Free Trade Agreement).
	• explain the function of income stabilization programs, and their effect on long- and short-term market trends.	Research influences of: • FIDP (Farm Income Disaster Program) • NISA (Net Income Stabilization Account).
Marketing Decisions	• identify factors that influence decisions to market the commodity, product or service; e.g.: – commodity supply, quality and pricing – financial constraints, including capital, credit and cash flow – time constraints on perishable products – transportation requirements	Contact the Alberta Wheat Pool (Farm Information Services) regarding marketing simulation programs.
	• identify ways in which relevant trade policies and regulations may influence marketing decisions; e.g.: – international and domestic trade rules – transportation policies – income support programs and subsidies	Contact Alberta Agriculture, Food and Rural Development (Farm Business Management Branch) regarding bulletin board systems.
	• describe strategies for gathering current market information; e.g.: – publications and journals – private consultation – radio and television – data base	Research strategic alliances developed among industry partners to increase market share in the global economy (e.g., Canada Beef Export Federation).
	• identify and assess viable alternatives for marketing the commodity, product or service; e.g.: – marketing board – cooperative – direct sale.	

MODULE AGR3100: BIOTECHNOLOGY

Level: Advanced

Theme: Technology and Applications

Prerequisite: None

Module Description: Students present the results of research on applications of biotechnology in agriculture and food production.

Module Parameters: Access to resources on current applications of biotechnology in agriculture and food production.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe the history and development of biotechnology	• a teacher-prepared assessment in which the student demonstrates knowledge of: – the nature of biotechnology and basic genetic terms – basic methods used to alter plant and animal characteristics – moral and ethical issues associated with developments in biotechnology. *Assessment Tool* Agriscience and Technology, *Section 1: Biotechnology* *Standard* *Response indicating 60% mastery*	25
• identify the benefits and costs associated with applications of biotechnology in agriculture and food production	• a presentation or report on the benefits and costs associated with one or more applications of biotechnology in each of the following areas: – product and market development – industry diversification – production efficiency – disease and pest control. *Assessment Tool* *Presentations/Reports: Advanced Level, AGRPRE-3* *Standard* *Complete the presentation or report to a standard of 3 on the rating scale*	25

MODULE AGR3100: BIOTECHNOLOGY (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain the processes used to develop a recent biotechnology within Alberta's agriculture industry	• given a recent development in biotechnology, completing a research project on: – major components of scientific research and problem solving evident in the process used to develop that technology – current/potential applications of similar processes in solving other problems that affect agriculture in Alberta. *Assessment Tool* *Research Process: Developments in Biotechnology, AGR3100–1* *Standard* *Complete all components of research to a standard of 3 on the rating scale*	50
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Nature and History	• explain how biotechnology involves the altering of cells and organisms to produce goods and services • provide a historical perspective on methods by which the characteristics of plants and animals have been altered; e.g.: – natural selection – selective breeding – genetic engineering	Discuss strengths/ weaknesses of different plant or animal characteristics.

Concept	Specific Learner Expectations	Notes
Nature and History (continued)	*The student should:* • describe basic vocabulary and techniques used in genetic engineering; e.g.: – chromosome – gene – gene mapping – gene splicing – cloning • outline present and emerging applications of biotechnology in major sectors of Alberta's economy; e.g.: – agriculture – health care – mining – forestry – energy – tourism.	Discuss applications of genetic engineering in selecting and breeding desirable characteristics.
Applications	• describe specific applications of biotechnology in agriculture and food production; e.g.: – product and market development – industry diversification – production efficiency – disease and pest control • describe environmental, economic and ethical issues related to developments in biotechnology; e.g.: – use of natural resources – control and patenting of life forms – impact of genetically altered organisms – food quality and safety – world food supply • predict possible effects of new biotechnologies on producers, processors, consumers and governments • explain the role of legislation in regulating developments in biotechnology.	View the video entitled *Guess What's Coming to Dinner* for an interesting account of applications of biotechnology (see Section I: Learning Resource Guide). Research applications of: • artificial insemination • embryo transplant • hormones • growth supplements. Discuss the risks and benefits.

MODULE AGR3100: BIOTECHNOLOGY (continued)

Concept	Specific Learner Expectations	Notes
Research Project	*The student should:* • identify a specific problem in agriculture and food production recently addressed through biotechnology; e.g.: – production costs – product quality – market supply – environmental impact • identify key stakeholder groups affected by the problem • describe funding and partnerships that were established to address the problem • explain applications of biotechnology in dealing with the problem; e.g.: – principles of genetic engineering – scientific design – experimental outcomes • describe the social, economic and environmental consequences of experimental outcomes • make recommendations regarding the use of biotechnology and practical solutions to the problem; e.g.: – management actions – further research.	Keep research projects relevant to personal needs and living experiences.

MODULE AGR3110: WATER MANAGEMENT

Level: Advanced

Theme: Management and Conservation

Prerequisite: None

Module Description: Students explain principles of water management and establish appropriate water management practices for an agriculture or horticulture enterprise.

Module Parameters: Access to community and government agencies responsible for sustainable agriculture development.

Supporting Module: AGR1110 Resource Management

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• describe the hydrologic cycle	• a presentation or report that provides: – an illustration of the hydrologic cycle depicting precipitation, evaporation, transpiration, condensation and groundwater flow – an explanation of changes that occur to water as it is recycled in the natural environment. *Assessment Tool* *Presentations/Reports: Advanced Level, AGRPRE–3* *Standard* *Complete the presentation or report to a standard of 3 on the rating scale*	10
• identify water sources important to agriculture in Alberta	• given an outline map of Alberta, locating and naming all major sources of surface water in the province. *Assessment Tool* *Task Checklist for Mapping, AGRMAP* *Standard* *Complete mapping to a standard of 3 on the rating scale*	10

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MODULE AGR3110: WATER MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • constructing diagrams/models of two or more on-site systems used to collect and distribute water for agriculture in Alberta. *Assessment Tool* *Assessment Criteria: Diagrams and Technical Drawings, AGRDRA* *Standard* *Complete diagrams/models to a standard of 3 on the rating scale*	
• explain how agriculture affects water resources at local and global levels	• given an issue that involves the impact of one or more agriculture practices on the water resource: – negotiating and debating the issue while assuming the role of one or more interest groups – preparing and presenting a position paper on the issue that outlines a responsible course of action. *Assessment Tool* *Negotiation and Debate: Advanced Level, AGRNEG–3* *Position Paper: Managing the Water Resource, AGR3110–1* *Standard* *Address criteria in negotiation/debate and the position paper to a standard of 3 on the rating scale*	30
• identify water quality factors and techniques used to manage water for the benefit of agriculture and the environment	• conducting laboratory investigations that permit the student to: – identify physical, chemical and biological characteristics of water important in plant and animal production – interpret water test results for a specific use in agriculture – prescribe water treatments based on the results of water tests. *Assessment Tool* *Lab Investigations: Water Quality, AGR3110–2* *Standard* *Complete laboratory investigations to a standard of 3 on the rating scale*	50

MODULE AGR3110: WATER MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • conducting field-based investigations of three or more technologies used in agriculture to: – manage limited and/or excess water supplies (e.g., irrigation, storage, diversion, drainage) – maintain water quality (e.g., cropping rotations, conservation tillage, management systems for animal waste, pesticide management). *Assessment Tool* *Observation Checklist for Field-based Investigations, AGROBS* *Standard* *Complete all sections of the checklist as they apply to objectives of the field investigation* • developing a water management plan for an agriculture venture. Management plan to address: – available surface and groundwater supplies – water requirements according to estimates of consumption – water treatments to ensure its suitability for use – management practices to compensate for water deficiencies and/or environmental concerns. *Assessment Tool* *Assessment Criteria: A Water Management Plan, AGR3110–3* *Standard* *Complete the water management plan to a standard of 3 on the rating scale*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3110: WATER MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
Hydrologic Cycle	*The student should:* • define and illustrate the water cycle • describe the roles of evaporation, precipitation, run-off and infiltration in the water cycle • explain physical, chemical and biological changes in water as it is cycled in the natural environment.	Explain the role of the hydrologic cycle in replenishing water supplies.
Water Sources and Quality	• describe the main sources of water for agriculture; e.g.: – ground water – surface water – precipitation • describe on-site systems used to collect and distribute water for agriculture • describe and give examples of physical, chemical and biological characteristics of water important to plants and animals; e.g.: – turbidity, temperature, odour and taste – dissolved oxygen, pH, mineral content – bacteria, viruses, algae and plankton • perform tests to determine the characteristics of water and its suitability for an agricultural use.	Investigate: • groundwater reserves • major surface water resources • precipitation patterns. If possible, organize a well-witching demonstration. Interpret water test results for specific uses in agriculture. Perform a test for water hardness. Analyze local water supplies through the local health unit. Determine water quality requirements for a plant/animal production enterprise.
Agriculture Effects	• explain how agricultural practices may affect the water resource at local and global levels; e.g.: – land clearing – soil cultivation – use of chemical fertilizers and pesticides – irrigation and draining practices – overgrazing/animal wastes • describe the effects of erosion and siltation on water quality • relate specific agricultural practices to physical, chemical and biological changes that occur in the water resource • debate a global issue regarding the impact of agriculture on water supply and/or water quality.	Consider impacts of limited/excess water supplies on: • humans • livestock • crops • wildlife • ecosystems. Investigate on-site collection systems. Invite a rural development specialist to discuss impacts of intensive agriculture on water quality. Explain "static level" and "drawdown" in relation to a farm well.

MODULE AGR3110: WATER MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
Water Management Practices	*The student should:* • describe and assess techniques used to manage limited and excess water supplies in agriculture; e.g.: – irrigation, storage, recycling – diversion, drainage, flood control	Discuss the significance of: • cropping rotations • animal waste management • wetlands management. Assess the potential of existing water supplies to meet projected water requirements for a specific agriculture venture.
	• identify and apply treatments for enhancing water quality both before and after use in agriculture	Explain how agriculture can assist in treating municipal wastes.
	• research forms of water ownership and legal aspects of water control; e.g.: – public, private and deeded ownership – government controls on pollution	Examples: • water rights • control of effluent disposal and pollution • diversion of natural waterways.
	• describe and assess agriculture practices aimed at maintaining water quality; e.g.: – cropping rotations – management of animal wastes – conservation tillage – optimal fertilizer and pesticide management	Compare agriculture practices in two locales having significant variance in their water resources.
	• explain how the maintenance of wetlands contributes to water management	Obtain the "Wetland Environments" kit (available from Ducks Unlimited).
	• describe strategic alliances developed among municipal, environmental and user groups to address environmental impacts.	

MODULE AGR3120: SOILS MANAGEMENT 2 (SOIL TESTING & AMENDING)

Level: Advanced

Theme: Management and Conservation

Prerequisite: AGR2120 Soils Management 1 (Soil Properties/Classification)

Module Description: Students demonstrate knowledge of appropriate soil testing and amending techniques, and they interpret soil survey maps and reports.

Module Parameters: Access to a science laboratory and land laboratory.

Note: Specific learner expectations in AGR2120 Soils Management 1 and AGR3120 Soils Management 2 are consistent with Soils Investigations (SOIL 100–35) at Olds College, Alberta. Teachers should contact the Registrar's Office, Olds College, regarding transfer of credit for competencies developed in this module and AGR3120 Soils Management 2.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • select appropriate fertilization techniques based on an analysis of the nutrient requirements of plants	*Assessment of student achievement should be based on:* • a theory test in which the student demonstrates knowledge of the nutrient requirements of plants and soil fertility. *Assessment Tool* *Sample Test Items: Nutrient Requirements of Plants*, Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery* • given soil characteristics and plant nutrient requirements, calculating an appropriate blend of fertilizer. *Assessment Tool* *Soils Investigations II Assignment Book (LRDC)* *Standard* *Complete all related exercises in the assignment book*	40

MODULE AGR3120: SOILS MANAGEMENT 2 (SOIL TESTING & AMENDING) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• demonstrate appropriate soil sampling techniques, and interpret soil test reports	• a theory test in which the student demonstrates knowledge of soil sampling and testing. *Assessment Tool* *Sample Test Items: Soil Sampling and Testing,* Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery* • given a soil test report, interpret and elaborate on soil and cropping information and fertilizer recommendations. *Assessment Tool* *Presentation/Reports: Advanced Level, AGRPRE–3* Soils Investigations *II Assignment Book* Soils Investigations *Materials Kit* *Standard* *Interpret information on soil, cropping and fertilizers to a standard of 3 on the rating scale*	20
• describe the legal location of a parcel of land, using the Western Grid Survey System	• a theory test in which the student demonstrates knowledge of the Western Grid Survey System. *Assessment Tool* *Sample Test Items: Western Grid Survey System,* Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery* • given the legal description of a parcel of land, locate the parcel of land on a map. *Assessment Tool* Soils Investigations *I Assignment Book* *Standard* *Complete all related exercises in the assignment book*	10

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MODULE AGR3120: SOILS MANAGEMENT 2 (SOIL TESTING & AMENDING) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• read and interpret soil survey maps and reports	• a theory test in which the student demonstrates knowledge of soil survey maps and reports. *Assessment Tool* *Sample Test Items: Soil Survey Maps and Reports,* Soils Investigations *Facilitator's Manual* *Standard* *Response indicating 75% mastery*	30
	• given a soil survey map and report for a given parcel of land, interpret and elaborate on the natural environment, soil classes and potential capacity of the land for agriculture. *Assessment Tool* *Presentations/Reports: Advanced Level, AGRPRE–3* Soils Investigations *II Assignment Book* Soils Investigations *Materials Kit* *Standard* *Interpret information regarding the natural environment and potential for agriculture to a standard of 3 on the rating scale*	
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3120: SOILS MANAGEMENT 2 (SOIL TESTING & AMENDING) (continued)

Concept	Specific Learner Expectations	Notes
Soil Fertility	*The student should:* • list the names and sources of essential nutrients and macronutrients for plants • describe soil colloids and their role in storing and releasing plant nutrients • identify major fertilizer nutrients and describe their benefits to plant growth • distinguish between natural and synthetic fertilizers, and explain the advantages and disadvantages of each • define fertilizer grade and give examples of commonly used grades • describe the pros and cons of specialty fertilizer products • describe common methods of fertilizer application • calculate an appropriate amount and blend of fertilizer based upon plant nutrient requirements.	Grow plants under hydroponic conditions to observe macro nutrient deficiencies. Contact Department of Instructional Design, Olds College, for additional support materials. Invite a soils specialist from government, industry or post-secondary to discuss nutrient requirements of plants and fertilization techniques.
Soil Testing	• identify reasons for soil testing • identify major soil nutrients and soil quality factors evaluated through a soil test • describe the steps involved in conducting a soil test; e.g.: – soil sampling – laboratory analysis – interpretation of results • demonstrate accurate soil sampling techniques • describe the major elements of a soil test report; e.g.: – soil and cropping information – fertilizer recommendations – soil analysis results – yield increase data • interpret a soil test report.	Collect soil samples in local area and obtain laboratory analysis. Interpret laboratory report and apply to production methods.

Concept	Specific Learner Expectations	Notes
	The student should:	
Western Grid Survey System	• identify and describe components of the Western Grid Survey System; e.g.: – lines of latitude and longitude – townships and ranges – sections and legal subdivisions – roads • identify the area of a parcel of land based upon information provided through its legal land description • describe and provide reasons for correction lines. partial sections and acreage anomalies • locate a specific parcel of land on a soil map by applying knowledge of its legal land description.	Obtain survey maps of the local area from government agencies. Locate known reference points on the maps.
Soil Survey Maps and Reports	• describe key components of the Canada Land Inventory (CLI) system; e.g.: – soil classes and subclasses – climatic subregions • describe the agricultural capacity of a given piece of land by interpreting a CLI Soil Capability for Agriculture map • describe the strengths and limitations of information provided through CLI maps in establishing agriculture management and conservation practices • describe the nature and purpose of information conveyed through a soil survey map and report; e.g.: – overview of natural environment – classification of soils – potential land use • identify and explain components of a soil survey map; e.g.: – map units – map legend – map symbols – reference section – key map • interpret a soil survey map and report.	Read and interpret local soil survey maps and reports. Invite a rural development specialist as a resource person.

MODULE AGR3130: SUSTAINABLE AGRICULTURE SYSTEMS

Level: Advanced

Theme: Management and Conservation

Prerequisite: None

Module Description: Students examine the impact of a range of agriculture practices on the environment, and they propose strategies for ensuring the sustainable use of natural resources.

Module Parameters: Access to community and government agencies responsible for sustainable agriculture management.

Note: This is a summative module requiring prior knowledge of the principles of sustainable resource development. It should be the last module studied in a series of Agriculture modules.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will: • describe the structure and functioning of ecosystems	*Assessment of student achievement should be based on:* • a teacher-prepared assessment in which the student demonstrates knowledge of interrelationships among living and non-living ecosystem components. Assessment to address: – the relationship of soil, water and air characteristics to plant and animal health/distribution – interactions and dependencies among living organisms – natural recycling processes that involve soil, water and air. *Assessment Tool* Ecosystems *(Teacher Resource Book)* *Standard* *Response indicating 60% mastery*	20

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MODULE AGR3130: SUSTAINABLE AGRICULTURE SYSTEMS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• explain potential impacts of agriculture systems on the environment	• given access to information on two or more agricultural systems (e.g., field crop production, greenhouse production, feedlot production, range grazing, food processing), completing a research project on the potential impacts of each on land, water, air and wildlife. *Assessment Tool* *Research Process: Environmental Impacts of Agriculture, AGR3130–1* *Standard* *Complete all components of research to a standard of 3 on the rating scale*	30
• develop and present strategies for ensuring the sustainable use of natural resources	• developing and presenting plans for an agriculture venture that demonstrate principles of sustainable development. Venture plan to address: – background information regarding conservation, preservation and sustainable development – a strategy for multiple land use – a strategy for soil fertility and conservation – a strategy for water management practices – interrelationships and dependencies among domestic and non-domestic plant and animal species – legislated environmental regulation and constraints. *Assessment Tool* *Assessment Criteria: Venture Plan for Sustainable Production, AGR3130–2* *Standard* *Complete the venture plan to a standard of 3 on the rating scale*	50
• demonstrate basic competencies.	• observations of individual effort and interpersonal exploration during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE AGR3130: SUSTAINABLE AGRICULTURE SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
Dynamic Ecosystems	*The student should:* • identify major living and non-living ecosystem components; e.g.: – soil, water and air – domestic/non-domestic plant and animal species – climate and temperature • describe interrelationships among ecosystem components; e.g.: – relationship of soil, water and air characteristics to plant and animal distribution/health – interactions and dependencies among living organisms • explain natural recycling processes that involve soil, water and air; e.g.: – exchange of gases – water cycle – nutrient cycles.	Obtain the "Wetland Environments" kit (available from Ducks Unlimited). See Section I: Learning Resource Guide.
Environmental Impacts	• explain the impact of deforestation, land clearing and cultivation practices on ecosystems • describe ways in which water diversion and irrigation projects have changed the environment • describe potential impacts of chemical and solid wastes on soil, water and air characteristics • explain potential impacts of selective breeding and genetic engineering on biodiversity of plant and animal populations • identify environmental pollutants resulting from large-scale and specialized production and/or processing practices.	

MODULE AGR3130: SUSTAINABLE AGRICULTURE SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
	The student should:	
Environmental Management	• define conservation, preservation and sustainable development • identify a rationale for the retention of land as a natural habitat • explain applications of multiple land use in an agriculture enterprise • explain the benefits and costs of wetlands in an agriculture system • describe soil management practices relevant to an agriculture system; e.g.: – soil fertility – soil conservation • describe water management practices relevant to an agriculture system; e.g.: – water quality – hydrologic cycle • identify government policies and regulations that support sustainable development; e.g.: – environmental constraints – inspection and regulation • explain potential impacts of agricultural systems on ecosystem dynamics • describe the benefits and costs of specific management practices in maximizing sustainable development and minimizing environmental impacts within an agriculture system • identify potential careers in environmental management; e.g.: – environmental assessment – environmental regulation.	Consider using computer simulations. Invite resource persons from environmental and industry organizations to discuss achievements and challenges related to sustainable agriculture systems.

MODULE AGR3140: NURSERY/GREENHOUSE CROPS 2 (MANAGEMENT TECHNIQUES)

Level: Advanced

Theme: Technology and Applications

Prerequisite: AGR2140 Nursery/Greenhouse Crops 1 (Materials & Processes)

Module Description: Students demonstrate techniques used to produce a nursery or greenhouse crop, focusing attention on enterprise selection, plant identification, genetics and reproduction, production skills and venture analysis.

Module Parameters: Access to a land laboratory and/or controlled growing environment.

Facilities and equipment should permit students to perform practical skills of plant production, as is required to produce a nursery or greenhouse crop; e.g., soil preparation, propagation, transplanting, cultivation, watering and fertilizing, pest and disease control.

Instructor training in the use of pesticides is recommended; e.g., Pesticide Applicator/Dispenser Certificate.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

Note: This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). See Section H (Linkages/Transitions) of this guide for further information.

Supporting Module: CTR2210 Workplace Safety (Practices)

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.

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Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• identify and assess opportunities for producing a nursery or greenhouse crop	• identifying a nursery or greenhouse crop variety suited to the growth conditions of a particular locale. Identification of the crop variety to be based on information gathered regarding: – environmental factors – a suitable growing medium – space requirements for plant growth – marketing and consumption patterns. *Assessment Tool* *Selection Criteria: Nursery and Greenhouse Crops, AGR3140–1* *Standard* *Address all selection criteria in identifying a nursery or greenhouse crop variety suited to local growth and market conditions*	10
• identify and describe nursery or greenhouse plants suited to Alberta climates	• given access to on-site (or photographed) tree, shrub, perennial, annual and/or tropical plant species/varieties used in the nursery and greenhouse industry, identifying selected specimens according to: – common and botanical names – growth habit and taxonomy – specific applications in Alberta. *Assessment Tool* *Identification Guide: Nursery and Greenhouse Plants, AGRIDE–NUR* *Information Sheet: Nursery and Greenhouse Plants, AGRINF–NUR* *Standard* *Identify 10 tree, shrub, perennial, annual and/or tropical plant species/varieties in addition to those identified in AGR2140*	20

MODULE AGR3140: NURSERY/GREENHOUSE CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
	• completing a research project on applications of heredity principles and reproductive technology relevant to one nursery/greenhouse crop variety. Research to address: – desirable and undesirable plant traits – selection criteria – applications of hybridization. *Assessment Tool* *Research Process: Heredity Principles and Reproductive Technology, AGR3140–2* *Standard* *Conduct research to a standard of 3 on the rating scale*	
• demonstrate practical skills in producing a nursery or greenhouse crop	• demonstrating practical skills as required to produce a nursery or greenhouse crop. Practical skills will involve: – preparing the growing medium/seed bed – propagation and transplanting – appropriate use of growing space – cultivating, watering and fertilizing the crop – controlling plant pests and diseases – packaging plant material – utilizing soil and water conservation practices. Production tasks will involve the application of appropriate safety guidelines for using equipment and supplies. *Assessment Tool* *Task Checklist: Nursery/Greenhouse Crops 2, AGR3140–3* *Lab Assessment: Plant Production, AGRLAB–PLT* *Standard* *Achieve a minimum performance rating of:* *– 2 in applicable areas of crop production* *– 3 in the safe use of equipment and supplies*	60

MODULE AGR3140: NURSERY/GREENHOUSE CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:* • maintaining an anecdotal record of all production tasks completed. *Assessment Tool* *Log/Record of Production Tasks: Plants, AGRLOG–PLT* *Standard* *Completing all sections of the log/record for each production task performed*	
• develop and present a plan for future nursery or greenhouse crop production, based on the outcomes of current production practices	• a brief report on the results of nursery or greenhouse crop production, and recommendations regarding future production ventures. Report to address: – product quality and saleability – variables affecting production outcomes – new skills/learnings that were applied – recommendations regarding future production based on current accomplishments and challenges. *Assessment Tool* *Presentations/Reports: Advanced Level, AGRPRE–3* *Standard* *Complete report to a standard of 3 on the rating scale*	10
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Enterprise Selection	*The student should:* • explain how personal needs may influence crop selection; e.g.: – food for personal consumption – economic goals – interest in aesthetics – personal motivation and aptitude • identify market factors that influence crop selection; e.g.: – market demands – market size, location and access – market competition – market trends • describe financial opportunities related to crop production; e.g.: – fixed and variable costs – forecast of returns – risk factors • describe land requirements and/or the suitability of soil and water conditions to production operations • describe the suitability of Alberta's climate to potential crops; e.g.: – growing days – frost-free days – ambient temperature – soil temperature • describe equipment needs at different stages of production; e.g.: – seeding/planting – cultivation – harvesting • describe labour and transportation needs within the industry; e.g.: – availability – cost.	Potential linkages exist with the Alberta Agriculture Green Certificate Farm Training Program: • crop production • irrigated crop production. For additional information, see Section H: Linkages/ Transitions. Identify input costs and potential profits for a production venture. Invite a rural development specialist to discuss factors in enterprise selection. Consider advertising and promotional technologies used to access greenhouse and nursery markets. Identify determinants of regional commodity production.

Concept	Specific Learner Expectations	Notes
	The student should:	
Taxonomy and Genetics	• classify nursery or greenhouse plants; e.g.: – according to growth habit – according to taxonomy • identify nursery or greenhouse plants, e.g.: – using common names – using botanical nomenclature • research heredity principles and their application to plants that are grown; e.g.: – dominant and recessive traits – selection criteria and procedures – systems of breeding • research reproduction technologies and their application to plants that are grown; e.g.: – propagation techniques – hybridization • describe procedures used to maintain the quality of plants within the industry; e.g.: – selection criteria – applications of hybridization – showing and judging.	Gather, label and mount plant collections. Use an identification key to identify previously unknown plants. Conduct breeding experiments with cucumbers, squash, pumpkins and/or gourds.
Production Skills	• apply knowledge of plant management practices in production activities; e.g.: – characteristics of plant health and disorders – remedial strategies for plant disorders – disease and pest control • use appropriate techniques to propagate nursery or greenhouse plants • apply principles of nutrition to production practices; e.g.: – essential nutrients – fertilizer formulation • demonstrate techniques for maintaining a sustainable production system; e.g.: – water and soil quality – organic and inorganic amendments – biological and chemical control measures – waste disposal.	Consider strategies for managing a crop from seed to sale. Potential linkages exist with various pesticide applicator certificate courses (see Section H: Linkages/Transitions). Plan for individual research regarding relevant issues. Keep a daily log that details production activities. Discuss biological control agents.

MODULE AGR3140: NURSERY/GREENHOUSE CROPS 2 (MANAGEMENT TECHNIQUES) (continued)

Concept	Specific Learner Expectations	Notes
Production Analysis	*The student should:* • describe production venture outcomes based on: – product quality – product saleability – application of new skills/learnings • describe the impact of economic, environmental and/or social factors on production practices and outcomes • make recommendations regarding future production ventures on the basis of current accomplishments and challenges in plant production.	Consider the impacts of local, national and global trends on venture outcomes. Plan for individual/group reports and presentations.

AGRICULTURE

SECTION G: ASSESSMENT TOOLS

The following pages comprise background information and strategies for assessing student achievement and the assessment tools that are listed in Sections D, E and F of this Guide.

This section of the Guide to Standards and Implementation has been designed to provide a common base of understanding about the level of competencies students are expected to demonstrate to successfully complete a module. The goal is to establish assessment standards for junior and senior high school students that are fair, credible and challenging.

These tools will assist teachers throughout the province to more consistently assess student achievement. The purpose of expanding on the assessment standards is to:

- increase confidence among students, parents, business/industry and post-secondary that students can demonstrate the competencies specified in the modules they have completed
- encourage fairness and equity in how students' efforts are judged
- enable learners to focus effort on key learnings
- support teachers and community partners in planning and implementing CTS.

These tools were validated during the optional stage of CTS implementation.

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ASSESSING STUDENT ACHIEVEMENT IN CTS

The CTS assessment standards assess two basic forms of competency:

- What can a student ***do***?
  - **make** a product (e.g., wood bowl, report, garment)
  - **demonstrate** a process
    - strand-related competencies (e.g., keyboarding, hair cutting, sewing techniques, lab procedures)
    - basic competencies (e.g., resource use, safety procedures, teamwork).
- What does a student ***know***?
  - knowledge base needed to demonstrate a competency (link theory and practice).

CTS Defines *Summative* Assessment Standards

The assessment standards and tools defined for the CTS modules, referenced in Sections D, E and F of this Guide, focus on the final (or summative) assessment of student achievement.

Assessment throughout the learning period (formative assessment) will continue to evaluate how students are progressing. Teachers direct and respond to students' efforts to learn—setting and marking tasks and assignments, indicating where improvement is needed, sending out interim reports, congratulating excellence, etc.

Teachers will decide which instructional and assessment strategies to apply during the formative learning period. As formative and summative assessment are closely linked, some teachers may wish to modify the tools included in this section to use during the instructional process. Teachers may also develop their own summative assessment tools as long as the standards are consistent with the minimum expectations outlined by Alberta Education.

Grading and Reporting Student Achievement

When a student can demonstrate ALL of the exit-level competencies defined for the module (module learner expectations), the teacher will designate the module as "successfully completed." The teacher will then use accepted grading practices to determine the percentage grade to be given for the module—a mark not less than 50%.

The time frame a teacher allows a student to develop the exit-level competency is a local decision. NOTE: The Senior High School Handbook specifies that students must have access to 25 hours of instruction for each credit. Students may, however, attain the required competencies in less time and may proceed to other modules.

Teachers are encouraged to consult their colleagues to ensure grading practices are as consistent as possible.

High school teachers may wish to refer to "Directions for Reporting Student Achievement in CTS" for information on how to use the CTS course codes to report the credits that students have earned to Alberta Education. (Copies of this document have been forwarded to superintendents and senior high school principals.)

Components of Assessment Standards in CTS

The following components are included in each module:

- **module learner expectations** (in the shaded left column of the module) define the exit-level competencies students are expected to achieve to complete a module. Each MLE defines and describes critical behaviours that can be measured and observed. The student must meet the standard specified for ALL MLEs within a module to be successful.
- **suggested emphasis** (right column of the module) provides a guideline for the relative significance of each MLE and can be used to organize for instruction.

- **criteria and conditions** (middle column of the module) set the framework for the assessment of student competency, specifying the minimum standard for performance and including a reference to assessment tools, where appropriate.

  Criteria define the behaviours that a student must demonstrate to meet the designated standard. For example, the criteria could describe the various techniques that must be demonstrated when using a tool, and/or describe the minimum components of a project the student must complete.

  Conditions outline the specifications under which a student's competency can be judged. For example, the conditions could specify whether the assessment should be timed or not, or if the student should be allowed to access support resources or references.

  Standard may be defined by (1) assessment tools and/or (2) "illustrative examples" of student work (both of which are referenced in this section, or sometimes in approved learning resources).

  Assessment Tools included in this section of the Guide tend to be of two types:

  - tools generic to a strand or to the entire CTS program; e.g., a standard five-point rating scale is used in all strands. Other generic tools include assessing reports and presentations and lab safety checklists. (*Names of these tools include the strand code [e.g., "INF" for Information Processing] and a code for the type of tool [e.g., "TDENT" for Text–Data Entry].)*
  - tools specific to a module; e.g., assessment checklist for assessing a venture plan in Enterprise and Innovation or a checklist for sketching, drawing and modelling in Design Studies. *(Names of these tools include the module code; e.g., "INF1010–1" indicating that it is the first module-specific tool used in Information Processing Module 101.)*

Development and Validation Processes

The "Criteria and Conditions" and "Suggested Emphasis" columns were validated with extensive input from teachers, professional associations/contacts and post-secondary institutions. The goal was to prepare well-structured assessment standards and related assessment tools that:

- establish an appropriate level of challenge and rigour
- relate directly to the type of learning described in the curriculum standard
- are easy to understand
- are efficient to implement
- can provide a consistent measure of what was expected to be measured.

As students and teachers work with the assessment standards and tools, it is expected that levels of performance will increase as more and more students are able to achieve the minimum standard. Therefore, the assessment standards and related tools will continue to be monitored, and revised as necessary to ensure appropriate levels of rigour and challenge, and successful transitions for students as they leave high school and enter the workplace or related post-secondary programs.

ASSESSING STUDENT ACHIEVEMENT IN AGRICULTURE

Assessing student achievement in Agriculture involves gathering information about what a student knows and is able to do, and comparing this information with learning outcomes defined by the curriculum (i.e., module learner expectations, assessment conditions and criteria, illustrative examples/reference sets).

Summative assessment for each module in Agriculture will focus attention on process (e.g., how the student approaches/performs particular tasks) and product (e.g., quality characteristics of the task performed, item produced or service rendered). While there are also knowledge-based components of learning within each module, a greater emphasis has been suggested for learning that involves the transfer/application of knowledge in task- or service-oriented situations.

Assessment Strategies and Tools

A variety of assessment tools are provided for assessing student performance within each module. Each tool communicates, through a five-point rating scale, a minimum standard for the completion of a learning task. Criteria for assessing the "basic competencies" students are expected to demonstrate throughout the learning process have been integrated with other performance criteria in each tool.

The assessment tools, when used collectively for a particular module, will assist teachers to assess successful module completion in an equitable and consistent manner. Depending on the way the classroom is organized, assessment tools may be used with individual students upon completion of specific learning tasks, or with the entire class at the end of a learning period.

Tools Generic to Agriculture

Assessment tools generic to Agriculture have been developed to assist in assessing student performance in key areas of learning across the scope and sequence. The generic tools communicate minimum performance standards for:

- conducting research, preparing reports and making presentations
- performing practical tasks in plant/animal production, floral design and landscape maintenance
- conducting laboratory and field-based investigations
- analyzing, negotiating and debating agriculture- and environment-related issues
- proposing personal/shared actions that foster environmental citizenship
- exploring career trends and conducting searches of employment opportunities.

The generic tools, referenced as applicable throughout each module in the conditions and criteria column, are identified with a six- or nine-letter code (e.g., AGROBS, AGRLAB–PLT). Generic tools developed for use in modules at a specific level are further identified by a number (e.g., AGRPRE–1 for introductory, AGRPRE–2 for intermediate, AGRPRE–3 for advanced).

Tools Specific to Agriculture Modules

Other assessment tools have been developed to assess competencies that are unique to specific modules within the Agriculture strand. These "module-specific" tools, also referenced in the conditions and criteria column for each module, are identified by the module number followed by a tool number (e.g., AGR1070–1 for the first module-specific tool in module AGR1070).

In some instances, authorized learning resources have been identified as assessment tools for specific modules. These learning resources usually contain test banks and other assessment strategies considered effective in establishing minimum standards for achievement.

Where appropriate, "Illustrative Examples" or "Sample Assignments/Projects" have been provided in a further attempt to communicate realistic expectations and acceptable standards of achievement.

BASIC COMPETENCIES REFERENCE GUIDE

The chart below outlines basic competencies that students endeavour to develop and enhance in each of the CTS strands and modules. Students' basic competencies should be assessed through observations involving the student, teacher(s), peers and others as they complete the requirements for each module. In general, there is a progression of task complexity and student initiative as outlined in the Developmental Framework★. **As students progress through Stages 1, 2, 3 and 4 of this reference guide, they build on the competencies gained in earlier stages**. Students leaving high school should set themselves a goal of being able to demonstrate Stage 3 performance.

Suggested strategies for classroom use include:

- having students rate themselves and each other
- using in reflective conversation between teacher and student
- highlighting areas of strength
- tracking growth in various CTS strands
- highlighting areas upon which to focus
- maintaining a student portfolio.

Stage 1— *The student:*	**Stage 2**— *The student:*	**Stage 3**— *The student:*	**Stage 4**— *The student:*
Managing Learning			
☐ comes to class prepared for learning	☐ →	☐ →	☐ →
☐ follows basic instructions, as directed	☐ follows instructions, with limited direction	☐ follows detailed instructions on an independent basis	☐ →
	☐ sets goals and establishes steps to achieve them, with direction	☐ sets clear goals and establishes steps to achieve them	☐ demonstrates self-direction in learning, goal setting and goal achievement
☐ acquires specialized knowledge, skills and attitudes	☐ applies specialized knowledge, skills and attitudes in practical situations	☐ transfers and applies specialized knowledge, skills and attitudes in a variety of situations	☐ transfers and applies learning in new situations; demonstrates commitment to lifelong learning
☐ identifies criteria for evaluating choices and making decisions	☐ identifies and applies a range of effective strategies for solving problems and making decisions	☐ uses a range of critical thinking skills to evaluate situations, solve problems and make decisions	☐ thinks critically and acts logically to evaluate situations, solve problems and make decisions
☐ uses a variety of learning strategies	☐ explores and uses a variety of learning strategies, with limited direction	☐ selects and uses effective learning strategies	☐ →
		☐ cooperates with others in the effective use of learning strategies	☐ provides leadership in the effective use of learning strategies
Managing Resources			
☐ adheres to established timelines; uses time/schedules/planners effectively	☐ creates and adheres to timelines, with limited direction; uses time/schedules/planners effectively	☐ creates and adheres to detailed timelines on an independent basis; prioritizes task; uses time/schedules/planners effectively	☐ creates and adheres to detailed timelines; uses time/schedules/planners effectively; prioritizes tasks on a consistent basis
☐ uses information (material and human resources), as directed	☐ accesses and uses a range of relevant information (material and human resources), with limited direction	☐ accesses a range of information (material and human resources), and recognizes when additional resources are required	☐ uses a wide range of information (material and human resources) in order to support and enhance the basic requirement
☐ uses technology (facilities, equipment, supplies), as directed, to perform a task or provide a service	☐ uses technology (facilities, equipment, supplies), as appropriate, to perform a task or provide a service, with minimal assistance and supervision	☐ selects and uses appropriate technology (facilities, equipment, supplies) to perform a task or provide a service on an independent basis	☐ recognizes the monetary and intrinsic value of managing technology (facilities, equipment, supplies)
☐ maintains, stores and/or disposes of equipment and materials, as directed	☐ maintains, stores and/or disposes of equipment and materials, with limited assistance	☐ maintains, stores and/or disposes of equipment and materials on an independent basis	☐ demonstrates effective techniques for managing facilities, equipment and supplies
Problem Solving and Innovation			
☐ participates in problem solving as a process ☐ learns a range of problem-solving skills and approaches	☐ identifies the problem and selects an appropriate problem-solving approach, responding appropriately to specified goals and constraints	☐ thinks critically and acts logically in the context of problem solving	☐ identifies and resolves problems efficiently and effectively
☐ practices problem-solving skills by responding appropriately to a clearly defined problem, specified goals and constraints, by: – generating alternatives – evaluating alternatives – selecting appropriate alternative(s) – taking action	☐ applies problem-solving skills to a directed or a self-directed activity, by: – generating alternatives – evaluating alternatives – selecting appropriate alternative(s) – taking action	☐ transfers problem-solving skills to real-life situations, by generating new possibilities ☐ prepares implementation plans ☐ recognizes risks	☐ identifies and suggests new ideas to get the job done creatively, by: – combining ideas or information in new ways – making connections among seemingly unrelated ideas – seeking out opportunities in an active manner

Stage 1— *The student:*	**Stage 2**— *The student:*	**Stage 3**— *The student:*	**Stage 4**— *The student:*
Communicating Effectively			
☐ uses communication skills; e.g., reading, writing, illustrating, speaking	☐ communicates thoughts, feelings and ideas to justify or challenge a position, using written, oral and/or visual means	☐ prepares and effectively presents accurate, concise, written, visual and/or oral reports providing reasoned arguments	☐ negotiates effectively, by working toward an agreement that may involve exchanging specific resources or resolving divergent interests
☐ uses language in appropriate context	☐ uses technical language appropriately	☐ encourages, persuades, convinces or otherwise motivates individuals	☐ negotiates and works toward a consensus
☐ listens to understand and learn	☐ listens and responds to understand and learn	☐ listens and responds to understand, learn and teach	☐ listens and responds to understand, learn, teach and evaluate
☐ demonstrates positive interpersonal skills in selected contexts	☐ demonstrates positive interpersonal skills in many contexts	☐ demonstrates positive interpersonal skills in most contexts	☐ promotes positive interpersonal skills among others
Working with Others			
☐ fulfills responsibility in a group project	☐ ——→——→	☐ seeks a team approach, as appropriate, based on group needs and benefits; e.g., idea potential, variety of strengths, sharing of workload	☐ leads, where appropriate, mobilizing the group for high performance
☐ works collaboratively in structured situations with peer members	☐ cooperates to achieve group results	☐ works in a team or group: – encourages and supports team members – helps others in a positive manner – provides leadership/ followership as required – negotiates and works toward consensus as required	☐ understands and works within the context of the group
☐ acknowledges the opinions and contributions of others in the group	☐ maintains a balance between speaking, listening and responding in group discussions ☐ respects the feelings and views of others		☐ prepares, validates and implements plans that reveal new possibilities
Demonstrating Responsibility			
Attendance			
☐ demonstrates responsibility in attendance, punctuality and task completion	☐ ——→——→	☐ ——→——→	☐ ——→——→
Safety			
☐ follows personal and environmental health and safety procedures	☐ recognizes and follows personal and environmental health and safety procedures	☐ establishes and follows personal and environmental health and safety procedures	☐ transfers and applies personal and environmental health and safety procedures to a variety of environments and situations
☐ identifies immediate hazards and their impact on self, others and the environment	☐ identifies immediate and potential hazards and their impact on self, others and the environment	☐ ——→——→	☐ ——→——→
☐ follows appropriate/emergency response procedures	☐ ——→——→	☐ ——→——→	☐ ——→——→
			☐ demonstrates accountability for actions taken to address immediate and potential hazards
Ethics			
☐ makes personal judgements about whether or not certain behaviours/actions are right or wrong	☐ assesses how personal judgements affect other peer members and/or family; e.g., home and school	☐ assesses the implications of personal/group actions within the broader community; e.g., workplace	☐ analyzes the implications of personal/group actions within the global context
			☐ states and defends a personal code of ethics as required

***Developmental Framework**			
• *Simple task* • *Structured environment* • *Directed learning*	• *Task with limited variables* • *Less structured environment* • *Limited direction*	• *Task with multiple variables* • *Flexible environment* • *Self-directed learning, seeking assistance as required*	• *Complex task* • *Open environment* • *Self-directed/self-motivated*

GENERIC RATING SCALE

SCALE	**RUBRIC STATEMENT** **(included in assessment tool/statements in *italics* are optional)** ***The student:***	**IS TASK/ PROJECT COMPLETED?**	**PROBLEM SOLVING:** **STUDENT INITIATIVE VS TEACHER DIRECTION/ SUPPORT**	**USE OF TOOLS, MATERIALS, PROCESSES**	***STANDARDS OF QUALITY/ PRODUCTIVITY***	***TEAMWORK*** ***LEADERSHIP***	***SERVICE*** ***CLIENT/ CUSTOMER***
4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute team goals. Analyzes and provides effective client/customer services beyond expectations.*	Exceeds defined outcomes.	Plans and solves problems effectively and creatively in a self-directed manner.	Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.	*Quality, particularly details and finishes, and productivity are consistent and exceed standards.*	*Leads others to contribute team goals.*	*Analyzes and provides effective client/customer services beyond expectations.*
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. *Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.*	Meets defined outcomes.	Plans and solves problems in a self-directed manner.	Tools, materials and/or processes are selected and used efficiently and effectively.	*Quality and productivity are consistent.*	*Works cooperatively and contributes ideas and suggestions that enhance team effort.*	*Analyzes and provides effective client/customer services.*
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. *Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.*	Meets defined outcomes.	Plans and solves problems with limited assistance.	Tools, materials and/or processes are selected and used appropriately.	*Quality and productivity are reasonably consistent.*	*Works cooperatively to achieve team goals.*	*Identifies and provides customer/client services.*
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. *Quality and productivity are reasonably consistent. Works cooperatively. Provides a limited range of customer/client services.*	Meets defined outcomes.	Follows a guided plan of action.	A limited range of tools, materials and/or processes are used appropriately.	*Quality and productivity are reasonably consistent.*	*Works cooperatively.*	*Provides a limited range of customer/client services.*
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.	Has not completed defined outcomes.		Tools, materials and/or processes are used inappropriately.			

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ASSESSMENT FRAMEWORK: ISSUE ANALYSIS

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student:	*The student:*	*The student:*
Preparation and Planning	**Preparation and Planning**	**Preparation and Planning**
• accurately describes an issue on which people disagree	• accurately describes an issue on which people disagree, explaining areas of disagreement	• accurately describes an issue on which people disagree, explaining specific causes of disagreement
• poses an important question regarding the issue	• poses one or more thoughtful questions regarding the issue	• poses thoughtful questions regarding the issue
• accesses basic in-school/community information sources regarding the issue	• accesses a range of relevant in-school/community resources	• accesses a range of relevant information sources and recognizes when additional information is required
• uses one or more information-gathering techniques	• uses a range of information-gathering techniques	• demonstrates resourcefulness in collecting data
Analyzing Perspectives	**Analyzing Perspectives**	**Analyzing Perspectives**
• clarifies different points of view regarding the issue; *e.g., social, economic, environmental*	• categorizes different points of view regarding the issue; *e.g., cultural, ethical, economic, environmental, health-related*	• categorizes different points of view regarding the issue; *e.g., cultural, ethical, economic, environmental, health-related, scientific, political*
• states a position on the issue and logical reasons for adopting that position	• states a position on the issue and logical reasons for adopting that position	• states a position on the issue and insightful reasons for adopting that position
• states an opposing position on the issue and logical reasons for adopting that position	• states two or more opposing positions on the issue and logical reasons for adopting each position	• states three or more opposing positions on the issue and thoughtful reasons for adopting each position
• identifies sources of conflict among different positions	• describes interrelationships among different perspectives/points of view	• analyzes interrelationships among different perspectives/points of view
• distinguishes between fact and fiction/opinion/theory	• determines accuracy/currency/reliability of information and ideas	• recognizes underlying bias/assumptions/values in information and ideas
Collaboration and Teamwork	**Collaboration and Teamwork**	**Collaboration and Teamwork**
• shares work appropriately among group members	• shares work appropriately among group members	• shares work appropriately among group members
• respects the views of others	• respects and considers the views of others	• respects and considers the views of others
	• negotiates solutions to problems	• negotiates with sensitivity solutions to problems
Evaluating Choices/Making Decisions	**Evaluating Choices/Making Decisions**	**Evaluating Choices/Making Decisions**
• identifies useful alternatives regarding the issue	• identifies important and appropriate alternatives regarding the issue	• describes in detail important and appropriate alternatives regarding the issue
• establishes criteria for assessing each alternative; *e.g., social, economic, environmental*	• establishes knowledge- and value-based criteria for assessing each alternative; *e.g., social, economic, environmental*	• establishes knowledge- and value-based criteria for assessing each alternative; *e.g., social, economic, environmental*
• selects an appropriate alternative based on established criteria	• selects an appropriate alternative by showing differences among choices	• selects an appropriate and useful alternative by showing differences among choices
• reflects on strengths/weaknesses of decisions by considering consequences	• assesses strengths/weaknesses of decisions by considering consequences	• assesses strengths/weaknesses of decisions by considering consequences and implications
• communicates information in a logical sequence to justify choices/decisions made	• communicates ideas in a logical sequence with supporting detail to justify choices/decisions made	• communicates thoughts/feelings/ideas clearly to justify choices/decisions made

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ASSESSMENT FRAMEWORK: LAB INVESTIGATIONS

CTSLAB

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student:	*The student:*	*The student:*
Management • prepares self for task • organizes and works in an orderly manner • carries out instructions accurately • uses time effectively	**Management** • prepares self for task • organizes and works in an orderly manner • interprets and carries out instructions accurately • plans and uses time effectively • adheres to routine procedures	**Management** • prepares self for task • organizes and works in an orderly manner • interprets and carries out instructions accurately • plans and uses time effectively in a logical sequence • displays leadership in adhering to routine procedures • attempts to solve problems prior to requesting help
Teamwork • cooperates with group members • shares work appropriately among group members	**Teamwork** • cooperates with group members • shares work appropriately among group members • negotiates solutions to problems	**Teamwork** • cooperates with group members • shares work appropriately among group members • negotiates with sensitivity solutions to problems • displays effective communication skills
Equipment and Materials • selects and uses appropriate equipment/materials • follows safe procedures/techniques • weighs and measures accurately • returns clean equipment/materials to storage areas	**Equipment and Materials** • selects and uses appropriate equipment/materials • models safe procedures/techniques • weighs and measures accurately • practises proper sanitation procedures • minimizes waste of materials • advises of potential hazards and necessary repairs	**Equipment and Materials** • selects and uses equipment/materials independently • demonstrates concern for safe procedures/techniques • weighs and measures accurately and efficiently • practises proper sanitation procedures • minimizes waste of materials • anticipates potential hazards and emergency response
Investigative Techniques • gathers and applies information from at least one source • makes predictions that can be tested • sets up and conducts experiments to test a prediction • distinguishes between manipulated/responding variables • obtains results that can be used to determine if some aspect of the prediction is accurate • summarizes important experimental outcomes	**Investigative Techniques** • gathers and applies information from a variety of sources • makes predictions that can be tested • plans, sets up and conducts experiments to test a prediction • identifies and explains manipulated/responding variables • obtains accurate results that confirm/reject the prediction • summarizes and applies experimental outcomes	**Investigative Techniques** • uses relevant information to explain observations • makes predictions that can be tested • plans, sets up and conducts experiments to test a prediction • analyzes relationships among manipulated/responding variables • obtains accurate results that confirm/reject prediction and answer related questions • summarizes, applies and evaluates experimental outcomes

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student:	*The student:*	*The student:*
Preparation and Planning	**Preparation and Planning**	**Preparation and Planning**
• accurately describes an issue on which people disagree	• accurately describes an issue on which people disagree, explaining areas of disagreement	• accurately describes an issue on which people disagree, explaining specific causes of disagreement
• poses an important question regarding the issue	• poses one or more thoughtful questions regarding the issue	• poses thoughtful questions regarding the issue
• accesses basic in-school/community information sources regarding the issue	• accesses a range of relevant in-school/community resources	• accesses a range of relevant information sources and recognizes when additional information is required
• uses one or more information-gathering techniques	• uses a range of information-gathering techniques	• demonstrates resourcefulness in collecting data
Analyzing Perspectives	**Analyzing Perspectives**	**Analyzing Perspectives**
• states a position on the issue and logical reasons for adopting that position	• states a position on the issue and logical reasons for adopting that position	• states a position on the issue and insightful reasons for adopting that position
• explains why the issue is important by presenting examples of possible consequences	• explains why the issue is important by presenting examples of possible consequences	• explains why the issue is important by presenting examples of possible consequences and implications
• clarifies different points of view regarding the issue; *e.g., social, economic, environmental*	• categorizes different points of view regarding the issue; *e.g., cultural, ethical, economic, environmental, health-related*	• categorizes different points of view regarding the issue; *e.g., cultural, ethical, economic, environmental, health-related, scientific, political*
• distinguishes between fact and fiction/opinion/theory	• determines accuracy/currency/reliability of information and ideas	• recognizes underlying bias/assumptions/values in information and ideas
Collaboration and Teamwork	**Collaboration and Teamwork**	**Collaboration and Teamwork**
• works with a range of peer members	• works with a range of peer members	• works with a wide range of peer members
• shares information/opinions/suggestions through group discussion	• shares information/opinions/suggestions, maintaining a balance between speaking and listening	• shares information/opinions/suggestions, maintaining a balance between speaking and listening
• listens to and respects the views of others	• listens to and respects the views of others, requesting clarification as necessary from other group members	• listens to and respects the views of others, requesting clarification as necessary from other group members
Negotiating and Debating	**Negotiating and Debating**	**Negotiating and Debating**
• presents a convincing argument in logical sequence supporting a position adopted on the issue	• presents a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance	• presents a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance and backing each with sound evidence
• provides a relevant response to opposing arguments	• provides a relevant and convincing response to opposing arguments	• provides a relevant and convincing rebuttal to opposing arguments
• speaks clearly so the argument can be understood	• speaks clearly without hesitation so the argument can be understood	• speaks clearly without hesitation so the argument can be understood by all listeners
• establishes a shared understanding of key alternatives and consequences relevant to the issue	• negotiates a shared agreement on preferred alternatives relevant to the issue	• negotiates a shared agreement on preferred alternatives by resolving divergent points of view

ASSESSMENT FRAMEWORK: PRESENTATIONS/REPORTS

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student:	*The student:*	*The student:*
Preparation and Planning	**Preparation and Planning**	**Preparation and Planning**
• sets goals and follows instructions accurately	• sets goals and describes steps to achieve them	• sets goals and describes steps to achieve them
• responds to directed questions and follows necessary steps to find answers	• uses personal initiative to formulate questions and find answers	• uses personal initiative to formulate questions and find answers
• accesses basic in-school/community information sources	• accesses a range of relevant in-school/community resources	• accesses a range of relevant information sources and recognizes when additional information is required
• interprets and organizes information into a logical sequence	• interprets, organizes and combines information into a logical sequence	• interprets, organizes and combines information in creative and thoughtful ways
• records information accurately, using correct technical terms	• records information accurately with appropriate supporting detail and using correct technical terms	• records information accurately, using appropriate technical terms and supporting detail
• uses time effectively	• plans and uses time effectively	• plans and uses time effectively, prioritizing tasks on a consistent basis
	• gathers and responds to feedback regarding approach to task and project status	• assesses and refines approach to task and project status based on feedback and reflection
Presentation	**Presentation**	**Presentation**
• demonstrates effective use of at least one medium of communication: *e.g., Written: spelling, punctuation, grammar, basic format* *Oral: voice projection, body language* *Audio-Visual: techniques, tools*	• demonstrates effective use of at least two communication media: *e.g., Written: spelling, punctuation, grammar, format (formal/informal)* *Oral: voice projection, body language, appearance* *Audio-Visual: techniques, tools, clarity*	• demonstrates effective use of a variety of communication media: *e.g., Written: spelling, punctuation, grammar, format (formal/informal, technical/literary)* *Oral: voice projection, body language, appearance, enthusiasm, evidence of prior practice* *Audio-Visual: techniques, tools, clarity, speed and pacing*
• uses correct grammatical convention and technical terms through proofreading/editing	• maintains acceptable grammatical and technical standards through proofreading and editing	• maintains acceptable grammatical and technical standards through proofreading and editing
• provides an introduction that describes the purpose of the project	• provides an introduction that describes the purpose and scope of the project	• provides an introduction that describes the purpose and scope of the project
• communicates information in a logical sequence	• communicates ideas into a logical sequence with sufficient supporting detail	• communicates thoughts/feelings/ideas clearly to justify or challenge a position
• states a conclusion based on a summary of facts	• states a conclusion by synthesizing the information gathered	• states a conclusion by analyzing and synthesizing the information gathered
• provides a reference list of three or more basic information sources	• provides a reference list that includes five or more relevant information sources	• gives evidence of adequate research through a reference list including seven or more relevant information sources

ASSESSMENT FRAMEWORK: RESEARCH PROCESS

CTSRES

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student:	*The student:*	*The student:*
Preparation and Planning • sets goals and follows instructions accurately • adheres to established timelines • responds to directed questions and follows necessary steps to find answers • uses time effectively	**Preparation and Planning** • sets goals and establishes steps to achieve them • creates and adheres to useful timelines • uses personal initiative to formulate questions and find answers • plans and uses time effectively	**Preparation and Planning** • sets clear goals and establishes steps to achieve them • creates and adheres to detailed timelines • uses personal initiative to formulate questions and find answers • plans and uses time effectively, prioritizing tasks on a consistent basis
Information Gathering and Processing • accesses basic in-school/community information sources • uses one or more information-gathering techniques • interprets and organizes information in a logical sequence • records information accurately, using correct technical terms • distinguishes between fact and fiction/opinion/theory • responds to feedback when current approach is not working	**Information Gathering and Processing** • accesses a range of relevant in-school/community resources • uses a range of information-gathering techniques • interprets, organizes and combines information into a logical sequence • records information accurately with appropriate supporting detail and using correct technical terms • determines accuracy/currency/reliability of information sources • gathers and responds to feedback regarding approach to the task	**Information Gathering and Processing** • accesses a range of relevant information sources and recognizes when additional information is required • demonstrates resourcefulness in collecting data • interprets, organizes and combines information in creative and thoughtful ways • records information accurately with appropriate supporting detail and using correct technical terms • recognizes underlying bias/assumptions/values in information sources • assesses and refines approach to the task and project status based on feedback and reflection
Collaboration and Teamwork • cooperates with group members • shares work appropriately among group members	**Collaboration and Teamwork** • cooperates with group members • shares work appropriately among group members • negotiates solutions to problems	**Collaboration and Teamwork** • cooperates with group members • shares work appropriately among group members • negotiates with sensitivity solutions to problems • displays effective communication and leadership skills
Information Sharing • demonstrates effective use of one or more communication media; *e.g., written, oral, audio-visual* • communicates information in a logical sequence • uses correct grammatical convention and technical terms • cites three or more basic information sources	**Information Sharing** • demonstrates effective use of two or more communication media; *e.g., written, oral, audio-visual* • communicates ideas in a logical sequence with sufficient supporting detail • maintains acceptable grammatical and technical standards • cites five or more relevant information sources	**Information Sharing** • demonstrates effective use of a variety of communication media; *e.g., written, oral, audio-visual* • communicates thoughts/feelings/ideas clearly to justify or challenge a position • maintains acceptable grammatical and technical standards • gives evidence of adequate information gathering by citing seven or more relevant information sources

PRESENTATIONS/REPORTS: Introductory Level AGRPRE–1

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/ Reporting	4	3	2	1	0	N/A

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

- ☐ sets goals and follows instruction accurately
- ☐ responds to directed questions and follows necessary steps to find answers
- ☐ accesses basic in-school/community information sources
- ☐ interprets and organizes information into a logical sequence
- ☐ records information accurately using correct technical terms
- ☐ uses time effectively

Content

Content (continued)

Presenting/Reporting

- ☐ demonstrates effective use of one or more communication media:
  e.g., *Written:* *spelling, punctuation, grammar, basic format*
  Oral: *voice projection, body language*
  Audio-visual: *techniques, tools*
- ☐ uses correct grammatical convention and technical terms through proofreading/editing
- ☐ provides an introduction that describes the purpose of the project
- ☐ communicates information in a logical sequence
- ☐ states a conclusion based on a summary of facts
- ☐ provides a reference list of three or more basic information sources

REFLECTIONS/COMMENTS:

PRESENTATIONS/REPORTS: Intermediate Level AGRPRE-2

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/ Reporting	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

- ☐ sets goals and describes steps to achieve them
- ☐ uses personal initiative to formulate questions and find answers
- ☐ access a range of relevant in-school/community resources
- ☐ interprets, organizes and combines information into a logical sequence
- ☐ records information accurately with appropriate supporting detail and using correct technical terms
- ☐ plans and uses time effectively
- ☐ gathers and responds to feedback regarding approach to task and project status

Content

Content (continued)

Presenting/Reporting

- ☐ demonstrates effective use of at least two communication media:
  - *e.g.,* *Written:* *spelling, punctuation, grammar, format (formal/informal)*
  - *Oral:* *voice projection, body language, appearance*
  - *Audio-visual:* *techniques, tools, clarity*
- ☐ maintains acceptable grammatical and technical standards through proofreading and editing
- ☐ provides an introduction that describes the purpose and scope of the project
- ☐ communicates ideas into a logical sequence with sufficient supporting detail
- ☐ states a conclusion by synthesizing the information gathered
- ☐ provides a reference list that includes five or more relevant information sources

REFLECTIONS/COMMENTS:

PRESENTATIONS/REPORTS: Advanced Level AGRPRE–3

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/ Reporting	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and describes steps to achieve them
☐ uses personal initiative to formulate questions and find answers
☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately using appropriate technical terms and supporting detail
☐ plans and uses time effectively, prioritizing tasks on a consistent basis
☐ accesses and refines approach to task and project status based on feedback and reflection

Content

Content (continued)

Presenting/Reporting

☐ demonstrates effective use of a variety of communication media:
  e.g., Written: *spelling, punctuation, grammar, format (formal/informal, technical/literary)*
  Oral: *voice projection, body language, appearance, enthusiasm, evidence of prior practice*
  Audio-visual: *techniques, tools, clarity, speed and pacing*
☐ maintains acceptable grammatical and technical standards through proofreading and editing
☐ provides an introduction that describes the purpose and scope of the project
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ states a conclusion by analyzing and synthesizing the information gathered
☐ gives evidence of adequate research through a reference list including seven or more relevant information sources.

REFLECTIONS/COMMENTS:

CAREER SEARCH: Introductory Level AGRCAR–1

TASK	OBSERVATION/RATING
Preparation and Planning	N/A 0 1 2 3 4
Information Gathering and Processing	N/A 0 1 2 3 4
Content	N/A 0 1 2 3 4
Collaboration and Teamwork	N/A 0 1 2 3 4
Information Sharing	N/A 0 1 2 3 4
TOTAL	

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and follows instructions accurately
☐ adheres to established timelines
☐ responds to directed questions and follows necessary steps to find answers
☐ uses time effectively

Information Gathering and Processing

☐ accesses basic in-school/community information sources
☐ uses one or more information-gathering techniques
☐ interprets and organizes information into a logical sequence
☐ records information accurately using correct technical terms
☐ distinguishes between fact and fiction/opinion/theory
☐ responds to feedback when current approach is not working

Content

☐ describes one or more career opportunities within the field; e.g.:
  - labour-based
  - technical
  - professional

Content (continued)

☐ identifies and describe occupations relevant to one or more career opportunities; e.g.:
  - nature of the occupation
  - duties of the employee

☐ provides a survey of current employment statistics relevant to one or more careers; e.g.:
  - types of occupations
  - number of employees

☐ identifies entry requirements and training programs relevant to one or more careers; e.g.:
  - entrance requirements and competencies
  - type of training programs

☐ assesses current and future employment opportunities and trends; e.g.:
  - local and national needs
  - opportunities for advancement

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members

Information Sharing

☐ demonstrates effective use of one or more communication media:
e.g., written, oral, audio-visual
☐ communicates information in a logical sequence
☐ uses correct grammatical/technical conventions
☐ cites basic information sources

REFLECTIONS/COMMENTS

CAREER SEARCH: Intermediate Level AGRCAR–2

TASK	OBSERVATION/RATING
Preparation and Planning	N/A 0 1 2 3 4
Information Gathering and Processing	N/A 0 1 2 3 4
Content	N/A 0 1 2 3 4
Collaboration and Teamwork	N/A 0 1 2 3 4
Information Sharing	N/A 0 1 2 3 4
TOTAL	

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and establishes steps to achieve them
☐ creates and adheres to useful timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively

Information Gathering and Processing

☐ accesses a range of relevant in-school/community resources
☐ uses a range of information-gathering techniques
☐ interprets, organizes and combines information into a logical sequence
☐ records information accurately with appropriate supporting detail and using correct technical terms
☐ determines accuracy/currency/reliability of information sources
☐ gathers and responds to feedback regarding approach to the task

Content

☐ describes one or more career opportunities within the field; e.g.:
  - labour-based
  - technical
  - professional

☐ identifies and describes occupations relevant to one or more career opportunities; e.g.:
  - nature of the occupation

Content (continued)

  - duties of the employee
  - workplace conditions

☐ provides a survey of current employment statistics relevant to one or more careers; e.g.:
  - types of occupations
  - number of employees
  - employment trends

☐ identifies entry requirements and training programs relevant to one or more careers; e.g.:
  - entrance requirements and competencies
  - type and extent of training programs

☐ assesses current and future employment opportunities and trends; e.g.:
  - local, national and international needs
  - opportunities for advancement and/or career change

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ negotiates solutions to problems

Information Sharing

☐ demonstrates effective use of two or more communication media:
e.g., written, oral, audio-visual
☐ communicates ideas in a logical sequence with sufficient supporting detail
☐ maintains acceptable grammatical and technical standards
☐ cites relevant information sources

REFLECTIONS/COMMENTS

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CAREER SEARCH: Advanced Level AGRCAR–3

TASK	OBSERVATION/RATING
Preparation and Planning	N/A 0 1 2 3 4
Information Gathering and Processing	N/A 0 1 2 3 4
Content	N/A 0 1 2 3 4
Collaboration and Teamwork	N/A 0 1 2 3 4
Information Sharing	N/A 0 1 2 3 4
TOTAL	

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and using correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ describes one or more career opportunities within the field; e.g.:
  - labour-based
  - technical
  - professional
☐ identifies and describes occupations relevant to one or more career opportunities; e.g.:
  - nature of the occupation
  - duties of the employee
  - workplace conditions
  - salary/wages and employee benefits

Content (continued)

☐ provides a survey of current employment statistics relevant to one or more careers; e.g.:
  - types of occupations
  - number of employees
  - employment trends
☐ identifies entry requirements and training programs relevant to one or more careers; e.g.:
  - entrance requirements and competencies
  - type and extent of training programs
  - post-secondary institutions
☐ assesses current and future employment opportunities and trends; e.g.:
  - local, national and international needs
  - opportunities for advancement and/or career change
  - opportunities for self-employment and entrepreneurship

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ negotiates solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ gives evidence of adequate information gathering by citing relevant information sources

REFLECTIONS/COMMENTS

NEGOTIATION AND DEBATE: Introductory Level AGRNEG–1

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Analyzing Perspectives	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Negotiating and Debating	4	3	2	1	0	N/A

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ accurately describes an issue on which people disagree
☐ poses an important question regarding the issue
☐ accesses basic in-school/community information sources regarding the issue
☐ uses one or more information-gathering techniques

Analyzing Perspectives

☐ states a position on the issue and logical reasons for adopting that position
☐ explains why the issue is important by presenting examples of possible consequences
☐ clarifies different points of view regarding the issue: *e.g., social, economic, environmental*
☐ distinguishes between fact and fiction/ opinion/theory

Collaboration and Teamwork

☐ works with a range of peer members
☐ shares information/opinions/suggestions through group discussion
☐ listens to and respects the views of others

Negotiating and Debating

☐ presents a convincing argument in logical sequence supporting a position adopted on the issue
☐ provides a relevant response to opposing arguments
☐ speaks clearly so the argument can be understood
☐ establishes a shared understanding of key alternatives and consequences relevant to the issue

REFLECTIONS/COMMENTS:

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Analyzing Perspectives	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Negotiating and Debating	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ accurately describes an issue on which people disagree, explaining areas of disagreement
- ☐ poses one or more thoughtful questions regarding the issue
- ☐ accesses a range of relevant in-school/community resources
- ☐ uses a range of information-gathering techniques

Analyzing Perspectives
- ☐ states a position on the issue and logical reasons for adopting that position
- ☐ explains why the issue is important by presenting examples of possible consequences
- ☐ categorizes different points of view regarding the issue: *e.g., cultural, ethical, economic, environmental, health-related*
- ☐ determines accuracy/currency/reliability of information and ideas

Collaboration and Teamwork
- ☐ works with a range of peer members
- ☐ shares information/opinions/suggestions, and maintains a balance between speaking and listening
- ☐ listens to and respects the views of others, and requests clarification as necessary from other group members

Negotiating and Debating
- ☐ presents a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance
- ☐ provides a relevant and convincing response to opposing arguments
- ☐ speaks clearly without hesitation so the argument can be understood
- ☐ negotiates a shared agreement on preferred alternatives relevant to the issue

REFLECTIONS/COMMENTS:

NEGOTIATION AND DEBATE: Advanced Level AGRNEG–3

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Analyzing Perspectives	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Negotiating and Debating	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

- ☐ accurately describes an issue on which people disagree, explaining specific causes of disagreement
- ☐ poses thoughtful questions regarding the issue
- ☐ accesses a range of relevant information sources and recognizes when additional information is required
- ☐ demonstrates resourcefulness in collecting data

Analyzing Perspectives

- ☐ states a position on the issue and insightful reasons for adopting that position
- ☐ explains why the issue is important by presenting examples of possible consequences and implications
- ☐ categorizes different points of view regarding the issue: *e.g., cultural, ethical, economic, environmental, health-related, scientific, political*
- ☐ recognizes underlying bias/assumptions/values in information and ideas

Collaboration and Teamwork (continued)

- ☐ works with a wide range of peer members
- ☐ shares information/opinions/suggestions, and maintains a balance between speaking and listening
- ☐ listens to and respects the views of others, and requests clarification as necessary from other group members

Negotiating and Debating

- ☐ presents a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance and backing each with sound evidence
- ☐ provides a relevant and convincing rebuttal to opposing arguments
- ☐ speaks clearly without hesitation so the argument can be understood by all listeners
- ☐ negotiates a shared agreement on preferred alternatives by resolving divergent points of view

REFLECTIONS/COMMENTS:

SAMPLE ISSUES FOR RESEARCH, ANALYSIS AND DEBATE

AGRSAM

- Biodiversity of Commercial Plant/Animal Species
- Land Reform in Developing Nations
- Declining Soil Profiles on Arable Land
- Use of Pesticides
- Ground Water Pollution
- Agriculture Subsidies
- Urban Encroachment on Rural Farm Land
- Cost of Protein Production
- Use of Arable Land for Cash Crops or Food Crops
- Slaughter of Livestock
- Use of Animals in Rodeo Events
- Livestock Housing
-
-
- Genetic Engineering of Plants/Animals
- Foreign Ownership of Arable Land in the Third World
- Drought, Famine and International Food Aid
- The Greenhouse Effect
- Agricultural Runoff
- International Trade Agreements
- Conscription of Farmers in Times of War
- Water Rights
- Desertification
- Hormone and Drug Use
- Artificial Insemination
- Dehorning/Castration/Tooth Removal
-
-

REFLECTION GUIDE: The Significance of Agriculture AGRREF

JOURNAL ENTRY: DATE:	#1	#2	#3	#4	#5
Preparation and Planning	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A
Analyzing Impacts/ Interactions	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A
Identifying Trends/Making Predictions	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A
Presenting and Reporting	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A	4 3 2 1 0 N/A
TOTAL:					

STANDARD: Complete 5 journal entries; address criteria for reflection to a standard of 1 for introductory level modules, 2 for intermediate level modules and 3 for advanced level modules.

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used in appropriately.

N/A Not applicable

CRITERIA FOR SUMMATIVE REFLECTION

The student:

Preparation and Planning
- ☐ sets goals and follows instructions accurately
- ☐ establishes a schedule of activities for completing each journal entry
- ☐ accesses in-school/community sources of information
- ☐ plans and uses time effectively

Analyzing Impacts/Interactions
- ☐ considers the impact of one or more agriculture practices on social/cultural values, environmental factors and/or economic viability within the local community
- ☐ explains interactions and potential sources of conflict among different interest groups; *e.g.: Who? What? Where? Why?*
- ☐ balances information and values
- ☐ demonstrates respect for and considers the views of others

Identifying Trends/Making Predictions
- ☐ considers the impact of consumer needs/wants/choices/decisions on agriculture; *e.g.: aesthetic, economic, health, recreational*
- ☐ relates current consumption patterns and changing world markets to trends in agriculture
- ☐ identifies developments in technology likely to influence future agriculture
- ☐ explains how the need for sustainable production systems and environmental stewardship may affect future agriculture

Presenting and Reporting
- ☐ provides an introduction that states the purpose of the journal entry
- ☐ communicates information and ideas clearly in a logical sequence
- ☐ uses correct grammatical convention and technical terms through proofreading/editing
- ☐ states a conclusion based on a summary of information and ideas

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Preparation and Planning** ☐ identifies a specific issue regarding the forest environment ☐ talks to others in order to clarify ideas ☐ accesses basic in-school/community resources regarding the issue ☐ identifies appropriate individuals/agencies to contact ☐ establishes a position on the issue ☐ ________________
4 3 2 1 0	**Writing the Letter** ☐ clearly states a position on the issue and a rationale for adopting that position ☐ considers the implications of various approaches for dealing with the issue ☐ cites references to support information/views ☐ maintains an appropriate tone of communication ☐ requests a response to the letter ☐ uses correct grammatical and technical conventions ☐ demonstrates proofreading and editing skills ☐ ________________
4 3 2 1 0	**Critiquing the Response** ☐ identifies important elements of the response: – acknowledgement of support or concern – statement of position and rationale – reference to supporting information/views – comments regarding future options/alternatives ☐ assesses quality of the response based on: – logical development of ideas – quality/quantity of supporting information and views – tone of communication ☐ suggests possible improvements to the response and original letter ☐ ________________

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

TASK CHECKLIST FOR MAPPING

AGRMAP

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Technical Components	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES, AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used in appropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and follows instructions
☐ responds to directed questions and/or follows necessary steps to find answers
☐ uses time effectively
☐ accesses basic in-school/community information sources
☐ interprets and organizes information logically
☐ transfers and/or extrapolates data from print and visual sources to create maps
☐ ______________________________
____

Technical Components

☐ prepares an outline of the mapped area to scale
☐ provides an appropriate map title
☐ records relevant location data
☐ provides a map legend that explains:
  – map symbols
  – map scale
☐ organizes use of space; e.g.:
  – map size in relationship to paper size
  – use of borders
  – position of legend

Technical Components (continued)

☐ demonstrated appropriate use of colour, shading and/or patterns
☐ produces a document free of wrinkles and smudges
☐ maintains appropriate technical standards through proofreading and editing; e.g.:
  – spelling
  – legibility
☐ ______________________________
____

Information Sharing

☐ communicates map content through oral presentation
☐ demonstrates ability to use map overlays in presentation
☐ poses questions based on information provided in map
☐ ______________________________
____

Collaboration and Teamwork

☐ shares work appropriately among group members
☐ respects the views of others
☐ negotiates solutions to problems
☐ ______________________________
____

REFLECTIONS/COMMENTS

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GUIDE TO CRITIQUING MEDIA INFORMATION — AGRMED

Student Name:	Date:
Media Source:	
Method of Presentation:	
Issue/Topic:	

GOALS/OBJECTIVES OF THE MEDIA PRESENTATION

SUMMARY OF INFORMATION PRESENTED (e.g., topic/issue, position taken, supporting detail, implications/consequences)

QUALITY/OBJECTIVITY OF INFORMATION PRESENTED (e.g., bias-balance, currency/reliability, logic/reasoning)

PERSONAL IMPACT OF MEDIA PRESENTATION

Yes	No	ASSESSING QUALITY/OBJECTIVITY
		The media presentation:
☐	☐	clearly describes a topic/issue/position taken with sufficient supporting detail
☐	☐	demonstrates bias-balance in the manner of presentation
☐	☐	makes reference to different points of view (e.g., social, economic, environmental)
☐	☐	distinguishes between fact and fiction/opinion/theory
☐	☐	references current and reliable sources for information and ideas
☐	☐	draws valid conclusions based on analysis/synthesis of information
☐	☐	

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Scheduling Tasks** ☐ sets goals and follows instructions accurately ☐ identifies major tasks and organizes them into a logical sequence ☐ uses time effectively ☐ ______________
4 3 2 1 0	**Gathering Information** ☐ defines a need within an agriculture/horticulture industry ☐ accesses basic in-school/community resources regarding similar needs and how they were addressed ☐ poses important questions regarding design potential ☐ talks to others in order to clarify ideas ☐ interprets and organizes information into a logical sequence ☐ ______________
4 3 2 1 0	**Constructing Drawings/Models** ☐ makes reasoned judgements regarding design potential ☐ generates ideas/alternatives regarding a mechanical system and/or process that will address the need ☐ selects the most appropriate alternative based on: – defined needs/problems – efficient use of resources – human and environmental safety ☐ constructs a simple drawing and/or model of the technology that illustrates/demonstrates: – component parts – principles of operation ☐ ______________
4 3 2 1 0	**Assessing Processes and Outcomes** ☐ assesses the design process and technology outcomes in relation to original needs, efficient use of resources and human/environmental safety ☐ summarizes opportunities and challenges relevant to industry applications of the technology ☐ suggests possible improvements to the design process and/or technology outcomes ☐ ______________

STANDARD IS 1 FOR INTRODUCORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

The student:

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.
0	has not completed defined outcomes. Tools, materials and/or processes are used in appropriately.
N/A	Not applicable

REFLECTIONS/COMMENTS

ASSESSMENT CRITERIA: Diagrams and Technical Drawings AGRDRA

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Technical Components	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES, AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used in appropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and follows instructions
☐ responds to directed questions and/or follows necessary steps to find answers
☐ uses time effectively
☐ accesses basic in-school/community information sources
☐ interprets and organizes information logically
☐ transfers and/or extrapolates data from print and visual sources to create a diagram/technical drawing
☐ ______________________________
____

Technical Components

☐ selects and uses appropriate drawing instruments and tools
☐ prepares an accurate outline of the theme to scale
☐ adds detail to the theme as required to ensure recognition and realism
☐ organizes use of space; e.g.:
  - diagram/technical drawing in relation to paper size
  - use of borders
  - position of labels

Technical Components (continued)

☐ accurately labels diagram/technical drawing components
☐ provides an appropriate title for the diagram/technical drawing
☐ demonstrates appropriate use of colour, shading and/or patterns
☐ produces a document free of wrinkles and smudges
☐ maintains appropriate technical standards through proofreading and editing; e.g.:
  - spelling
  - readability
☐ ______________________________
____

Information Sharing

☐ communicates content of diagram/technical drawing through oral presentation
☐ demonstrates ability to use overlays in presentation
☐ poses questions based on information provided in the diagram/technical drawing
☐ ______________________________
____

Collaboration and Teamwork

☐ shares work appropriately among group members
☐ respects the views of others
☐ negotiates solutions to problems
☐ ______________________________
____

REFLECTIONS/COMMENTS

ASSESSMENT CRITERIA: Flow Charts AGRFLO

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Technical Components	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES, AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

The student:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used in appropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and follows instructions
☐ responds to directed questions and/or follows necessary steps to find answers
☐ uses time effectively
☐ accesses basic in-school/community information sources
☐ interprets and organizes information logically
☐ transfers and/or extrapolates data from print and visual sources to create a flow chart
☐ ______________________________
____

Technical Components

☐ prepares an outline of steps/processes in proper sequence and order
☐ organizes use of space in relation to paper size
☐ selects and uses appropriate drawing instruments and tools
☐ creates a flow chart that:
  - has a definite beginning and end
  - clearly indicates the sequencing of steps/processes
☐ provides arrows to indicate correct sequence of steps/processes

Technical Components (continued)

☐ labels flow chart components as required
☐ provides an appropriate title for the flow chart
☐ demonstrates appropriate use of colour, shading and/or patterns
☐ produces a document free of wrinkles and smudges
☐ maintains appropriate technical standards through proofreading and editing; e.g.:
  - spelling
  - legibility
☐ ______________________________
____

Information Sharing

☐ communicates content of flow chart through oral presentation
☐ demonstrates ability to use flow chart overlays in presentation
☐ poses questions based on information provided in the flow chart
☐ ______________________________
____

Collaboration and Teamwork

☐ shares work appropriately among group members
☐ respects the views of others
☐ negotiates solutions to problems
☐ ______________________________
____

REFLECTIONS/COMMENTS

OBSERVATION CHECKLIST FOR FIELD-BASED INVESTIGATIONS **AGROBS**

Student Name:	Module:	Date:
Destination:		
Contact Person:		
Title/Position of Contact Person:		

PURPOSE OF TRIP (Teacher Defined)

STUDENT EXPECTATIONS (What do you expect to observe/learn?)

ACTUAL OBSERVATIONS (What did you actually observe/learn?)

APPLICATIONS OF SCIENCE AND TECHNOLOGY

REFLECTION ON FIELD INVESTIGATION (What did you find most interesting? least interesting?)

OBSERVATION CHECKLIST FOR FIELD-BASED INVESTIGATIONS (continued) AGROBS

OBSERVED CAREERS

Career #1:
Title:
Education Requirements:
Salary Range:
Pros:
Cons:

Career #2:
Title:
Education Requirements:
Salary Range:
Pros:
Cons:

Career #3:
Title:
Education Requirements:
Salary Range:
Pros:
Cons:

Would any of the observed careers appeal to you? Why or why not?

SUMMATIVE CHECKLIST
(to be completed by teacher/supervisor)

The student:

- ☐ identifies trip goals and follows instructions accurately
- ☐ adheres to established itinerary/timelines
- ☐ demonstrates appropriate use of equipment, supplies and/or clothing
- ☐ adheres to acceptable safety standards and behavioural expectations as established by school policy
- ☐ accesses resources available on-site
- ☐ uses effective questioning techniques to gather information
- ☐ interprets and records information accurately
- ☐ follows directions/procedures indicated by tour guide and/or as established by industry policy while on site
- ☐ completes all sections of the observation checklist for each field-based investigation.
- ☐
- ☐

	Basic Floral Design						
			Floral Design 1				
					Floral Design 2		
PRODUCT	**Vase Arrangements** • bud vase • larger vase	**Round (Mound) Arrangements**	**Triangular Arrangements** • symmetrical • asymmetrical	**Centrepieces** • horizontal • pyramidal	**European Arrangements** • presentation • cluster • vegetative • parallel • hogarth curve	**Oriental Arrangements** • Ikebana • Moribana • Ritka	**Bridal Design, Calendar Event and Other Special Occasion Arrangements** • nosegay • cascade • crescent • wreath • garland • display prop

CUT FLOWERS AND FOLIAGE

	Common and Botanical Names	Basic Characteristics	General Use
Dianthus caryophyllus	☐	☐	☐
Rosa	☐	☐	☐
Chrysanthemum	☐	☐	☐
Narcissus	☐	☐	☐
Tulipa	☐	☐	☐
Gypsophila paniculata	☐	☐	☐
Limonium tartarica	☐	☐	☐
Limonium sinuatum	☐	☐	☐
Consolida regalis	☐	☐	☐
Eucalyptus	☐	☐	☐
Archniodes adiantoformis	☐	☐	☐
Asparagus setaceus	☐	☐	☐
Ruscus	☐	☐	☐
Dendrobium orchid	☐	☐	☐
Gladiolus hortulanus	☐	☐	☐
Freesia hybrid	☐	☐	☐
Alstroemeria	☐	☐	☐
Anthurium scherzerianum	☐	☐	☐
Aster	☐	☐	☐
Gerberia	☐	☐	☐
Iris	☐	☐	☐
Protea	☐	☐	☐
Stephanotis floribunda	☐	☐	☐
Achillea Filipendulina	☐	☐	☐
Echinops ritro	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐

INTERIOR PLANTS

	Common and Botanical Names	Basic Characteristics	General Use
Chrysanthemum	☐	☐	☐
Euphorbia pulcherrima	☐	☐	☐
Lilium	☐	☐	☐
Rhododendron indicum	☐	☐	☐
Saintpaulia	☐	☐	☐
Aglaonema species	☐	☐	☐
Asparagus plumosus	☐	☐	☐
Begonia species	☐	☐	☐
Chlorophytum comosum	☐	☐	☐
Cissus species	☐	☐	☐
Cordyline indivisa	☐	☐	☐
Ficus species	☐	☐	☐
Hibiscus	☐	☐	☐
Kalanchoe blossfeldiana	☐	☐	☐
Cyclamen persicum	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐

STANDARD: The student identifies by common and botanical names and describes the basic characteristics and general use of:

10 cut flowers and/or foliage specimens

5 interior plants

REFERENCE GUIDES:

- *Home Floral Design*
- *Step by Step: A Designer's Guide to Basic Floral Design.*

BEST COPY AVAILABLE

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IDENTIFICATION GUIDE: Field Crop Species AGRIDE–FLD

	Common Name	Growth Habit	Basic Structure
Cereals/Small Grains			
Oats	☐	☐	☐
Barley	☐	☐	☐
Wheat	☐	☐	☐
Rye	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
Oil Seeds			
Canola	☐	☐	☐
Flax	☐	☐	☐
Sunflower	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
Grass Seeds/Forage			
Alfalfa	☐	☐	☐
Brome Grass	☐	☐	☐
Fescue	☐	☐	☐
Rye Grass	☐	☐	☐
Timothy	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

	Common Name	Growth Habit	Basic Structure
Vegetables/Fruits			
Beet	☐	☐	☐
Carrot	☐	☐	☐
Corn	☐	☐	☐
Pea	☐	☐	☐
Potato	☐	☐	☐
Raspberry	☐	☐	☐
Strawberry	☐	☐	☐
Turnip	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
Specialty/Other			
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

STANDARD: **The student identifies the common name, growth habit and basic structure of 10 Alberta field crop species.**

IDENTIFICATION GUIDE: Nursery and Greenhouse Plants AGRIDE–NUR

TREES AND SHRUBS

	Common and Botanical Names	Growth Habit/ Taxonomy	Specific Applications in Alberta
Coniferous			
Picea pungens	☐	☐	☐
Pinus sylvestris	☐	☐	☐
Pinus mugo	☐	☐	☐
Juniperus scopulorum "Blue Heaven"	☐	☐	☐
Thuja occidentalis "Brandon"	☐	☐	☐
Thuja occidentalis "Woodwardii"	☐	☐	☐
Juniperus sabina	☐	☐	☐
Juniperus chinensis "Old Gold"	☐	☐	☐
Juniperus sabina tamariscifolia	☐	☐	☐
Deciduous			
Fraxinus pensylvancia lanceolata	☐	☐	☐
Betula pendula "Gracilis"	☐	☐	☐
Prunus Maacki	☐	☐	☐
Prunus virginiana "Shubert"	☐	☐	☐
Malus x "Royalty"	☐	☐	☐
Sorbus americana	☐	☐	☐
Elaeagnus angustifolia	☐	☐	☐
Prunus x cistena	☐	☐	☐
Prunus triloba "Multiplex"	☐	☐	☐
Potentilla fruticosa	☐	☐	☐
Cotoneaster lucidus	☐	☐	☐
Cornus alba	☐	☐	☐
Syringa villosa	☐	☐	☐
Spirea x bumalda "Froebelli"	☐	☐	☐

PERENNIALS

	Common and Botanical Names	Growth Habit/ Taxonomy	Specific Applications in Alberta
Arabis alpina	☐	☐	☐
Artemisia schmidtiana	☐	☐	☐
Armeria maritima	☐	☐	☐
Asilbe spp.	☐	☐	☐
Bergenia cordifolia	☐	☐	☐
Cerastium tomentosum	☐	☐	☐
Chrysanthemum x superbum	☐	☐	☐
Convallaria majalis	☐	☐	☐
Delphinium species	☐	☐	☐
Dicentra spectabilis	☐	☐	☐
Hemerocallis hybrids	☐	☐	☐
Hosta varieties	☐	☐	☐
Iris spp.	☐	☐	☐
Iberis sempervirens	☐	☐	☐
Lupinus polyphyllus	☐	☐	☐
Lychnis calcedonica	☐	☐	☐
Paeonia lactiflora	☐	☐	☐
Phlox subulata	☐	☐	☐
Sedum spp.	☐	☐	☐
Tradescantia virginiana	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐

STANDARD: **The student identifies the common and botanical names, growth habits/taxonomy, and specific applications of 10 tree, shrub, perennial, annual and/or tropical species suited for use in Alberta.**

BEST COPY AVAILABLE

ANNUALS

	Common and Botanical Names	Growth Habit/ Taxonomy	Specific Applications in Alberta
Ageratum houstonianum	☐	☐	☐
Antirrhinum majum	☐	☐	☐
Coleum x hybrids	☐	☐	☐
Gladiolus hybrids	☐	☐	☐
Lathyrus odoratus	☐	☐	☐
Lobelia erinus	☐	☐	☐
Lobularia maritima	☐	☐	☐
Nicotiana alata grandiflora	☐	☐	☐
Pelargonium x hortorum	☐	☐	☐
Petunia x hybrida	☐	☐	☐
Portulaca grandiflora	☐	☐	☐
Senicio cineraria	☐	☐	☐
Salvia splendens	☐	☐	☐
Tageteas patula	☐	☐	☐
Viola x wittrockiana	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐

TROPICALS

	Common and Botanical Names	Growth Habit/ Taxonomy	Specific Applications in Alberta
Chrysanthemum	☐	☐	☐
Euphorbia pulcherrima	☐	☐	☐
Lilium	☐	☐	☐
Rhododendron indicum	☐	☐	☐
Saintpaulia	☐	☐	☐
Aglaonema species	☐	☐	☐
Asparagus plumosus	☐	☐	☐
Begonia species	☐	☐	☐
Chlorophytum comosum	☐	☐	☐
Cissus species	☐	☐	☐
Cordyline indivisa	☐	☐	☐
Ficus species	☐	☐	☐
Hibiscus	☐	☐	☐
Kalanchoe blossfeldiana	☐	☐	☐
Cyclamen persicum	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐

STANDARD: **The student identifies the common and botanical names, growth habits/taxonomy, and specific applications of 10 tree, shrub, perennial, annual and/or tropical species suited for use in Alberta.**

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IDENTIFICATION GUIDE: Landscape Plants AGRIDE–LDS

TREES, SHRUBS AND GROUNDCOVERS

	Common and Botanical Names	General Characteristics/ Growth Habits	Functional Use in Alberta
Coniferous			
Picea pungens	☐	☐	☐
Pinus sylvestris	☐	☐	☐
Pinus mugo	☐	☐	☐
Juniperus scopulorum "Blue Heaven"	☐	☐	☐
Thuja occidentalis "Brandon"	☐	☐	☐
Thuja occidentalis "Woodwardii"	☐	☐	☐
Juniperus sabina	☐	☐	☐
Juniperus chinensis "Old Gold"	☐	☐	☐
Juniperus sabina tamariscifolia	☐	☐	☐
Deciduous			
Fraxinus pensylvancia lanceolata	☐	☐	☐
Betula pendula "Gracilis"	☐	☐	☐
Prunus Maacki	☐	☐	☐
Prunus virginiana "Shubert"	☐	☐	☐
Malus x "Royalty"	☐	☐	☐
Sorbus americana	☐	☐	☐
Elaeagnus angustifolia	☐	☐	☐
Prunus x cistena	☐	☐	☐
Prunus triloba "Multiplex"	☐	☐	☐
Potentilla fruticosa	☐	☐	☐
Cotoneaster lucidus	☐	☐	☐
Cornus alba	☐	☐	☐
Syringa villosa	☐	☐	☐
Spirea x bumalda "Froebelli"	☐	☐	☐
	☐	☐	☐

PERENNIALS

	Common and Botanical Names	General Characteristics/ Growth Habits	Functional Use in Alberta
Arabis alpina	☐	☐	☐
Artemisia schmidtiana	☐	☐	☐
Armeria maritima	☐	☐	☐
Asilbe spp.	☐	☐	☐
Bergenia cordifolia	☐	☐	☐
Cerastium tomentosum	☐	☐	☐
Chrysanthemum x superbum	☐	☐	☐
Convallaria majalis	☐	☐	☐
Delphinium species	☐	☐	☐
Dicentra spectabilis	☐	☐	☐
Hemerocallis hybrids	☐	☐	☐
Hosta varieties	☐	☐	☐
Iris spp.	☐	☐	☐
Iberis sempervirens	☐	☐	☐
Lupinus polyphyllus	☐	☐	☐
Lychnis calcedonica	☐	☐	☐
Paeonia lactiflora	☐	☐	☐
Phlox subulata	☐	☐	☐
Sedum spp.	☐	☐	☐
Tradescantia virginiana	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐
	☐	☐	☐

STANDARD: The student identifies the common and botanical names, general characteristics/growth habits and functional use of 10 landscape plants (including tree, shrub, groundcover, flower and turfgrass specimens) suited for use in Alberta landscapes.

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IDENTIFICATION GUIDE: Landscape Plants (continued) AGRIDE–LDS

ANNUALS

	Common and Botanical Names	General Characteristics/ Growth Habits	Functional Use in Alberta
Ageratum houstonianum	☐	☐	☐
Antirrhinum majum	☐	☐	☐
Coleum x hybrids	☐	☐	☐
Gladiolus hybrids	☐	☐	☐
Lathyrus odoratus	☐	☐	☐
Lobelia erinus	☐	☐	☐
Lobularia maritima	☐	☐	☐
Nicotiana alata grandiflora	☐	☐	☐
Pelargonium x hortorum	☐	☐	☐
Petunia x hybrida	☐	☐	☐
Portulaca grandiflora	☐	☐	☐
Senicio cineraria	☐	☐	☐
Salvia splendens	☐	☐	☐
Tageteas patula	☐	☐	☐
Viola x wittrockiana	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐

TURFGRASSES

	Common and Botanical Names	General Characteristics/ Growth Habits	Functional Use in Alberta
Kentucky blue grass	☐	☐	☐
Creeping red fescue	☐	☐	☐
Quack grass	☐	☐	☐
Creeping bent grass	☐	☐	☐
Crested wheat grass	☐	☐	☐
Timothy	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________	☐	☐	☐
____________			

STANDARD: The student identifies the common and botanical names, general characteristics/growth habits, and functional use of 10 landscape plants (including tree, shrub, groundcover, flower and turfgrass specimens) suited for use in Alberta landscapes.

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IDENTIFICATION GUIDE: Landscape/Turfgrass Weeds AGRIDE–WED

PERENNIAL WEEDS

	Common Name	Growth Habit	Management Technique
Canada Thistle	☐	☐	☐
Creeping Charlie	☐	☐	☐
Dandelion	☐	☐	☐
Foxtail Barley	☐	☐	☐
Plantain	☐	☐	☐
Purple Loosestrife	☐	☐	☐
Quackgrass	☐	☐	☐
Scentless Chamomile	☐	☐	☐
Toadflax	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐

ANNUAL WEEDS

	Common Name	Growth Habit	Management Technique
Chickweed	☐	☐	☐
Common Groundsel	☐	☐	☐
Lamb's-quarters	☐	☐	☐
Pineapple Weed	☐	☐	☐
Prostrate Knotweed	☐	☐	☐
Purslane	☐	☐	☐
Round-leaved Mallow	☐	☐	☐
Shepherd's Purse	☐	☐	☐
Stinkweed	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐
________	☐	☐	☐

STANDARD: The student identifies the common name, growth habit and management technique for 5 common weeds found in Alberta landscapes and/or turfgrasses.

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Flower/Plant Name

Common: *Carnation*
Botanical: *Dianthus caryephyllos*

Basic Characteristics and Features: *mass - sometimes form*

Available colours: *white, pink, peach, yellow and variegated*

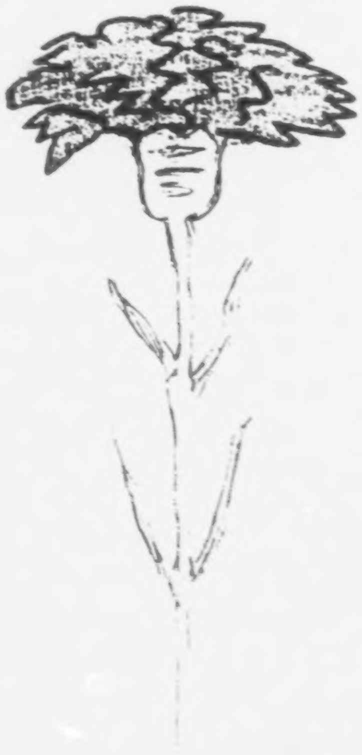
Seasonal Availability: *all year*

Vase Life: *14 days*

General and Specific Care: *recut under warm water*
– *use preservative solution*
– *store in cooler*
– *reds lose colour at low temperature*
– *avoid ethylene gas*
– *recut stems*

Applications/Use: *corsage and boutonniere, bud vases, arrangements*

Other Notes: *long lasting flower and easy to care for*



INFORMATION SHEET: Field Crop Species **AGRINF-FLD**

General Information

Common Name: ____________________

Classification by Use; e.g., cereal, legume, root, oil, forage, tuber: ____________________

Growth Habit; e.g., size, form, texture: ____________________

Structural Characteristics; e.g., root, stem, leaf, flower/seed: ____________________

Growth Requirements; e.g., water, light, temperature, soil, nutrients, space variables: ____________________

Selection Criteria; e.g., expected yield, market demand, labour/equipment requirements, pest control, cost of production: ____________________

Applications/Use: ____________________

Other Notes: ____________________

Picture or Sketch

(to include, where possible, structural parts of the root, stem, leaf and flower/seed.)

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Plant Name

(tree, shrub, perennial, annual or tropical)

Common: ______________________________

Botanical: ______________________________

Basic Characteristics; e.g., size, form, texture: ______________

____

____

____

Special Features; e.g., flowers, leaves, fruit, bark: ______________

____

____

____

Suggested Location/Light Requirements; e.g., full sun, partial sun, full shade, partial shade: ______________________

____

____

Care and Handling: ______________________

____

____

____

Applications/Use: ______________________

____

Other Notes: ______________________

____

____

____

____

Picture or Sketch

Plant Name
(tree, shrub, groundcover, flower, turfgrass)

Common: ______
Botanical: ______

Functional Use in Landscape: ______

Basic Characteristics/Growth Habits; e.g., size, form, texture: ______

Special Features; e.g., flowers, leaves, fruit, bark: ______

Suggested Location/Light Requirements; e.g., full sun, partial sun, full shade, partial shade: ______

Care and Handling: ______

Other Notes: ______

Picture or Sketch

INFORMATION SHEET: Landscape/Turfgrass Weeds **AGRINF–WED**

Name of Weed

Common Name: ____________________

Life Cycle; e.g., annual, biennial, perennial: ____________

General Description/Growth Habits; e.g., size, form, texture: ______

Basic Identification Characteristics: ____________

Preferred Growing Location; e.g., light, moisture, soil: ________

Time of Flowering: ____________________

Cultural Control Techniques: ____________________

Herbicidal Control Techniques: ____________________

Other Notes: ____________________

Picture or Sketch

(1997)

INFORMATION SHEET: Hand/Power Equipment and Supplies **AGRINF–EQU**

Name of Tool, Equipment or Supply

(e.g., hand tool, power tool, materials, supplies)

Item: ______________________________
Manufacturer/Brand: ______________________

Basic Characteristics/Features; e.g., type, size, composition, structure:

Application in Plant Production or Landscape Service:

Directions for Use:

Safety Guidelines:

Instructions for Maintenance/Storage:

Other Notes:

Picture or Sketch

COMPLETE ALL SECTIONS OF THE INFROMATION SHEET FOR HAND/POWER EQUIPMENT AND SUPPLIES RELEVANT TO THREE AREAS OF PLANT PRODUCTION OR LANDSCAPE SERVICE

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LAB ASSESSMENT: Floral Design   AGRLAB–FLO

Student Name: ________________________________

Module: Basic Floral Design Floral Design 1 Floral Design 2

PROJECT:							
DATE:							
Management	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Teamwork	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Construction Techniques	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Safety and Sanitation	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
TOTAL							

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

TASK CHECKLIST

The student:

Management
- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time in a logical sequence
- ☐ maintains a clean work area
- ☐ attempts to solve problems prior to requesting help
- ☐ ______________________________
- ☐ ______________________________

Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems
- ☐ displays effective communication skills
- ☐ ______________________________
- ☐ ______________________________

Construction Techniques
- ☐ selects and uses appropriate tools and floral material
- ☐ interprets and adapts the project plan
- ☐ applies appropriate design principles
- ☐ performs tasks in logical sequence
- ☐ minimizes waste of materials
- ☐ ______________________________
- ☐ ______________________________

Safety and Sanitation
- ☐ handles equipment and materials safely
- ☐ demonstrates concern for safe procedures/ techniques
- ☐ maintains facilities in a sanitary condition
- ☐ sanitizes tools and containers
- ☐ advises of immediate hazards and necessary repairs
- ☐ ______________________________
- ☐ ______________________________

LAB ASSESSMENT: Plant Production AGRLAB–PLT

Student Name: ______________________________

Module: AGR103 AGR203 AGR214 AGR210 AGR303 AGR314

PRODUCTION TASK:	Soil Preparation	Cultivation	Propagation/ Transplanting	Watering and Fertilizing	Control of Pests/Disease	Harvesting
DATE:						
Management	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Teamwork	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Equipment and Materials	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Production Techniques	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
TOTAL						

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

TASK CHECKLIST

The student:

Management
- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time in a logical sequence
- ☐ maintains a tidy work environment
- ☐ attempts to solve problems prior to requesting help
- ☐ maintains records regarding the production cycle
- ☐ ______________________________
- ☐ ______________________________

Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems
- ☐ displays effective communication skills
- ☐ ______________________________
- ☐ ______________________________

Equipment and Materials
- ☐ selects and uses appropriate equipment and materials
- ☐ handles equipment and materials safely
- ☐ demonstrates concern for safe procedures/techniques
- ☐ maintains facilities in a sanitary condition
- ☐ sanitizes tools and containers
- ☐ advises of immediate hazards and necessary repairs
- ☐ ______________________________
- ☐ ______________________________

Production Techniques
- ☐ performs tasks in a logical sequence
- ☐ minimizes waste of materials
- ☐ weighs and measures accurately
- ☐ utilizes appropriate environmental control and conservation practices
- ☐ ______________________________
- ☐ ______________________________

LAB ASSESSMENT: Landscape and Turf Care

AGRLAB–LDS

Student Name: ______________________________

Module: AGR107 AGR206 AGR306

MAINTENANCE TASK:	Planting/ Transplanting	Cultivation/ Mulching	Pruning/ Mowing/ Trimming	Watering/ Fertilizing	Pest/Disease Control	Spring/Winter Preparation
DATE:						
Management	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Teamwork	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Equipment and Materials	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Service Techniques	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
TOTAL						

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES,
2 FOR INTERMEDIATE LEVEL MODULES, AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

TASK CHECKLIST

The student:

Management
- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time in a logical sequence
- ☐ maintains a clean work area
- ☐ attempts to solve problems prior to requesting help
- ☐ maintains records regarding services rendered
- ☐ ______________________________
- ☐ ______________________________

Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems
- ☐ displays effective communication skills
- ☐ ______________________________
- ☐ ______________________________

Equipment and Materials
- ☐ selects and uses appropriate equipment and materials
- ☐ handles equipment and materials safely
- ☐ demonstrates concern for safe procedures/techniques
- ☐ maintains facilities in a sanitary condition
- ☐ utilizes appropriate conservation practices
- ☐ sanitizes tools and containers
- ☐ advises of immediate hazards and necessary repairs
- ☐ ______________________________
- ☐ ______________________________

Service Techniques
- ☐ performs tasks in a logical sequence
- ☐ minimizes waste of materials
- ☐ weighs and measures accurately
- ☐ responds to client needs in a professional manner
- ☐ ______________________________
- ☐ ______________________________

LAB ASSESSMENT: Animal Care AGRLAB–ANM

Student Name: ______________________________

Module: AGR103 AGR202 AGR204 AGR207 AGR210 AGR304 AGR307

TASK:	Feeding	Housing and Bedding	Handling and Restraint	Health and Welfare	Care for Young	Training Practices
DATE:						
Management	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Teamwork	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Equipment and Supplies	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Animal Handling and Care	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
TOTAL						

STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES, 2 FOR INTERMEDIATE LEVEL MODULES AND 3 FOR ADVANCED LEVEL MODULES

Rating Scale:

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

TASK CHECKLIST

The student:

Management

- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time in a logical sequence
- ☐ maintains a tidy work environment
- ☐ attempts to solve problems prior to requesting help
- ☐ maintains records regarding animal care provided
- ☐ ______________________________

Teamwork

- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems
- ☐ displays effective communication skills
- ☐ ______________________________

Equipment and Supplies

- ☐ selects and uses appropriate equipment and supplies
- ☐ handles equipment and supplies safely
- ☐ demonstrates concern for safe procedures/techniques
- ☐ maintains facilities in a sanitary condition
- ☐ sanitizes tools and containers
- ☐ advises of immediate hazards and necessary repairs
- ☐ ______________________________

Animal Handling and Care

- ☐ performs tasks in a logical sequence
- ☐ demonstrates concern for animal health and welfare
- ☐ minimizes waste of supplies
- ☐ weighs and measures accurately
- ☐ utilizes appropriate environmental control and conservation practices
- ☐ ______________________________

LAB ASSESSMENT: Agriculture Processing AGRLAB–PRO

Student Name: ______________________________

Module: AGR106 AGR205 AGR305

PROJECT:							
DATE:							
Management	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Teamwork	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Equipment and Materials	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
Processing Techniques	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0	4 3 2 1 0
TOTAL							

**STANDARD IS 1 FOR INTRODUCTORY LEVEL MODULES,
2 FOR INTERMEDIATE LEVEL MODULES AND 3 FOR ADVANCED LEVEL MODULES**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not Applicable

TASK CHECKLIST

The student:

Management

- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time in a logical sequence
- ☐ maintains a tidy work environment
- ☐ attempts to solve problems prior to requesting help
- ☐ ______________________
- ☐ ______________________

Teamwork

- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems
- ☐ displays effective communication skills
- ☐ ______________________
- ☐ ______________________

Equipment and Materials

- ☐ selects and uses appropriate tools and material inputs
- ☐ handles equipment and input materials safely
- ☐ demonstrates concern for safe procedures/techniques
- ☐ maintains facilities in a sanitary condition
- ☐ sanitizes tools and containers
- ☐ advises of immediate hazards and necessary repairs
- ☐ ______________________
- ☐ ______________________

Processing Techniques

- ☐ performs tasks in a logical sequence
- ☐ minimizes waste of materials
- ☐ weighs and measures accurately
- ☐ utilizes appropriate environmental control and conservation practices
- ☐ ______________________
- ☐ ______________________

LOG/RECORD OF PRODUCTION TASKS: Plants AGRLOG–PLT

Student Name:
Module:
Supervisor:

Production Task:
Date:
Time Required to Complete Task:
Activity/Task Details
Plants/Crops Affected:
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Equipment and Materials Used:
Comments:

Production Task:
Date:
Time Required to Complete Task:
Activity/Task Details
Plants/Crops Affected:
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Equipment and Materials Used:
Comments:

Production Task:
Date:
Time Required to Complete Task:
Activity/Task Details
Plants/Crops Affected:
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Equipment and Materials Used:
Comments:

Production Task:
Date:
Time Required to Complete Task:
Activity/Task Details
Plants/Crops Affected:
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Equipment and Materials Used:
Comments:

(Verification by Supervisor)
(Date)

STANDARD: The student completes all sections of the log/record for each production task performed.

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LOG/RECORD OF LANDSCAPE/TURFGRASS SERVICES AGRLOG–LDS

Student Name: ______________ Module: ______________ Supervisor: ______________

Service Provided: ______________ Date: ______________
Time Required to Perform Service: ______________
Approximate Area of Work-site: ______________
Maintenance/Installation Details: ______________

Environmental Conditions (e.g., temperature, light conditions, humidity, air circulation): ______________

Equipment and Materials Used: ______________

Comments: ______________

(Client Signature) (Client Phone Number)

Service Provided: ______________ Date: ______________
Time Required to Perform Service: ______________
Approximate Area of Work-site: ______________
Maintenance/Installation Details: ______________

Environmental Conditions (e.g., temperature, light conditions, humidity, air circulation): ______________

Equipment and Materials Used: ______________

Comments: ______________

(Client Signature) (Client Phone Number)

Service Provided: ______________ Date: ______________
Time Required to Perform Service: ______________
Approximate Area of Work-site: ______________
Maintenance/Installation Details: ______________

Environmental Conditions (e.g., temperature, light conditions, humidity, air circulation): ______________

Equipment and Materials Used: ______________

Comments: ______________

(Client Signature) (Client Phone Number)

Service Provided: ______________ Date: ______________
Time Required to Perform Service: ______________
Approximate Area of Work-site: ______________
Maintenance/Installation Details: ______________

Environmental Conditions (e.g., temperature, light conditions, humidity, air circulation): ______________

Equipment and Materials Used: ______________

Comments: ______________

(Client Signature) (Client Phone Number)

(Verification by Supervisor) (Date)

STANDARD: The student completes all sections of the log/record for each service performed.

LOG/RECORD OF ANIMAL CARE **AGRLOG–ANM**

Student Name: Module: Supervisor:

Animal Care Task: Date:
Time Required to Complete Task:
Activity/Task Details
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Status of Animal Health/Welfare (e.g., normal/abnormal signs)
Equipment and Supplies Used:
Comments:

Animal Care Task: Date:
Time Required to Complete Task:
Activity/Task Details
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Status of Animal Health/Welfare (e.g., normal/abnormal signs)
Equipment and Supplies Used:
Comments:

Animal Care Task: Date:
Time Required to Complete Task:
Activity/Task Details
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Status of Animal Health/Welfare (e.g., normal/abnormal signs)
Equipment and Supplies Used:
Comments:

Animal Care Task: Date:
Time Required to Complete Task:
Activity/Task Details
Environmental Conditions (e.g., indoor/outdoor temperature, light conditions, humidity, air circulation):
Status of Animal Health/Welfare (e.g., normal/abnormal signs)
Equipment and Supplies Used:
Comments:

(Verification by Supervisor) (Date)

STANDARD: The student completes all sections of the log/record for each animal care task performed.

DESIGN SKETCH

(Note: Use simple line drawings. Show colour if it is an element of design.)

LEGEND:

DESIGN PRINCIPLES

COMPOSITION (i.e., theme, purpose):

COLOUR HARMONY:

BALANCE AND SYMMETRY:

PROPORTION AND SCALE:

RYTHM AND HARMONY:

DEPTH AND LINE:

TEXTURE AND FOCAL EMPHASIS:

FLORAL MATERIAL REQUIRED:

OTHER MATERIAL/SUPPLIES REQUIRED:

SPECIAL NOTES/CONSIDERATIONS:

SEQUENCE OF TASKS (i.e., step by step details):

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

PRICING WORKSHEET: Floral Services	**AGRPRI-FLO**

PRICING SCENARIO

FLORAL PRODUCT: *Miniature Carnation Coursage*		
Price Range: $12.00 - $16.00		
CONSTRUCTION MATERIALS (cost x 2):	**WHOLESALE/ COST PRICE**	**RETAIL/SELLING PRICE**
Wire and Tape	*$ .40*	*$ .80*
FLOWERS (cost x 3):		
3 Pink Miniature Carnations *4 Yellow Miniature Carnations* *White Statice* *Gypsophila (Baby's Breath)*	*$ .75* *1.00* *.25* *.25*	*$ 2.25* *3.00* *.75* *.75*
FOLIAGES (cost x 3):		
Sprengeri	*$ .50*	*$ 1.50*
ACCESSORIES (cost x 2):		
1/3 yard 7/8" Bluebell Single Face Satin Ribbon *1/3 yard #9 Ivory Lace Ribbon* *Corsage Bag, Box and Pins*	*$ .40* *.32* *1.00*	*$ .80* *.64* *2.00*
TOTAL MATERIAL COST	*4.87*	*12.49*
LABOUR CHARGE (based on complexity of design, time factor and overhead):		
20% of Retail/Selling Price of Materials & Supplies		*$ 2.50*
TOTAL SELLING PRICE		*$ 14.99*
LABOUR TIME:		
Approximately 20 minutes to complete.		
ADDITIONAL INFORMATION:		
Lace ribbon is split in half to create a "scalloped" look. This is combined with satin ribbon to accent a corsage look suitable for a baby shower or many other occasions.		

SAMPLE WORKSHEET

FLORAL PRODUCT:		
Price Range:		
CONSTRUCTION MATERIALS:	**WHOLESALE/ COST PRICE**	**RETAIL/SELLING PRICE**
	$	$
FLOWERS:		
	$	$
FOLIAGES:		
	$	$
ACCESSORIES:		
	$	$
TOTAL MATERIAL COST		
LABOUR CHARGE (based on complexity of design, time factor and overhead):		
	$	$
TOTAL SELLING PRICE		
LABOUR TIME:		
ADDITIONAL INFORMATION:		

STANDARD: Accurate completion of all sections of a pricing worksheet for each of three floral arrangements constructed.

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KNOWLEDGE/APPLICATION ASSESSMENT: Comprehensive Agriculture AGR1010–1

Assessment Criteria and Conditions:

- provides a definition/explanation of comprehensive agriculture that encompasses three or more examples of each of the following:
  - production operations
  - processing systems and value-added products
  - marketing and distribution systems
  - business and labour providing inputs/services
  - community and government agencies serving agriculture.

Suggested Reference(s):

- *Growing More Than Food, Growing Alberta*
- *Space Age Agriculture: Land and Life*
- *Agriscience and Technology.*

STANDARD: Address five of the criteria for a definition/explanation of comprehensive agriculture to a minimum standard of 1 on the rating scale

Rating Scale

4 meets project/task objectives in a self-directed manner. Provides explanations and critical judgements based on a superior knowledge base. Demonstrates an understanding of relevant concepts and related issues.

3 meets project/task objectives in a self-directed manner. Provides explanations and comparisons of relevant concepts using more precise terminology. Requires little or no prompting.

2 meets project/task objectives with limited assistance in planning and selecting and using resources. Applies knowledge of concepts in different situations using correct terminology. Requires occasional prompting.

1 completes task as directed, demonstrating basic skills/completeness by following a guided course of action. Uses simple recall to demonstrate basic knowledge of concepts. Requires prompting.

0 does not complete task, or is unable to provide a suitable response

N/A Not applicable

Background Information

Obtain *Growing More Than Food, Growing Alberta*, a CD ROM available from Growing Alberta (see Section I: Learning Resource Guide). This resource provides an overview of the diversity of Alberta's agriculture industry, including its economic, social and environmental significance to all Albertans.

Topics covered include:

- primary production
- agrifoods
- distribution and inspection
- food retailing
- sustainability
- lifestyle contributions.

Criteria for a Definition of Agriculture

A definition/explanation of comprehensive agriculture should:

☐ distinguish between agriculture production, processing and marketing systems

☐ include public and private agencies/organizations that service and/or support the industry; e.g.:
- business and labour inputs/services
- supporting community and government agencies

☐ make reference to primary operations traditionally regarded as agriculture (e.g., crop and livestock production), as well as to industry activities that add value to primary commodities (e.g., the agrifoods industry)

☐ make reference to the economic and aesthetic values of horticulture in Alberta communities (e.g., nursery and greenhouse crop production, landscape services)

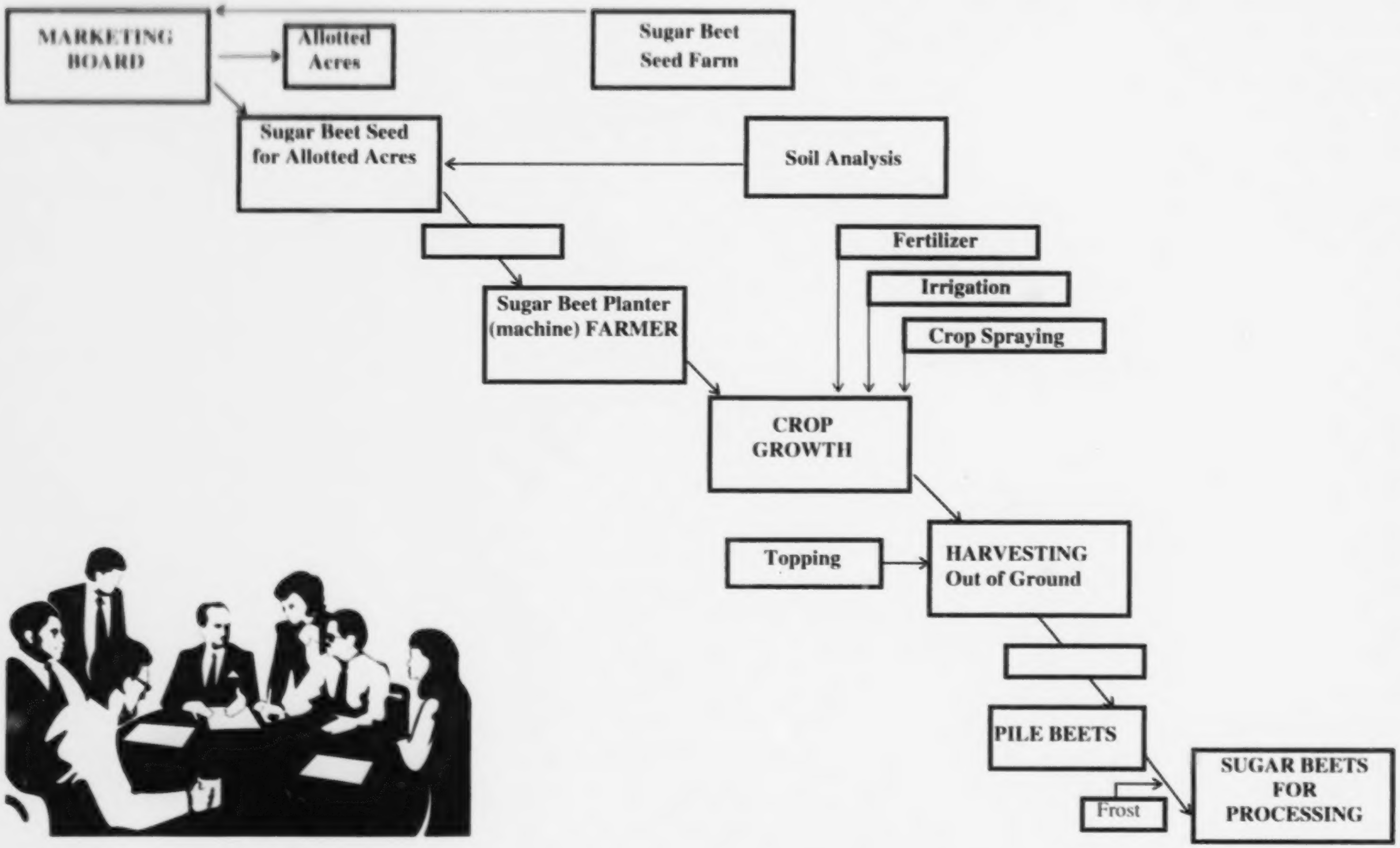
☐ demonstrate awareness that agriculture is an integral part of Alberta's economy, and is present in both rural and urban communities

☐ ______________________________

REFLECTIONS/COMMENTS

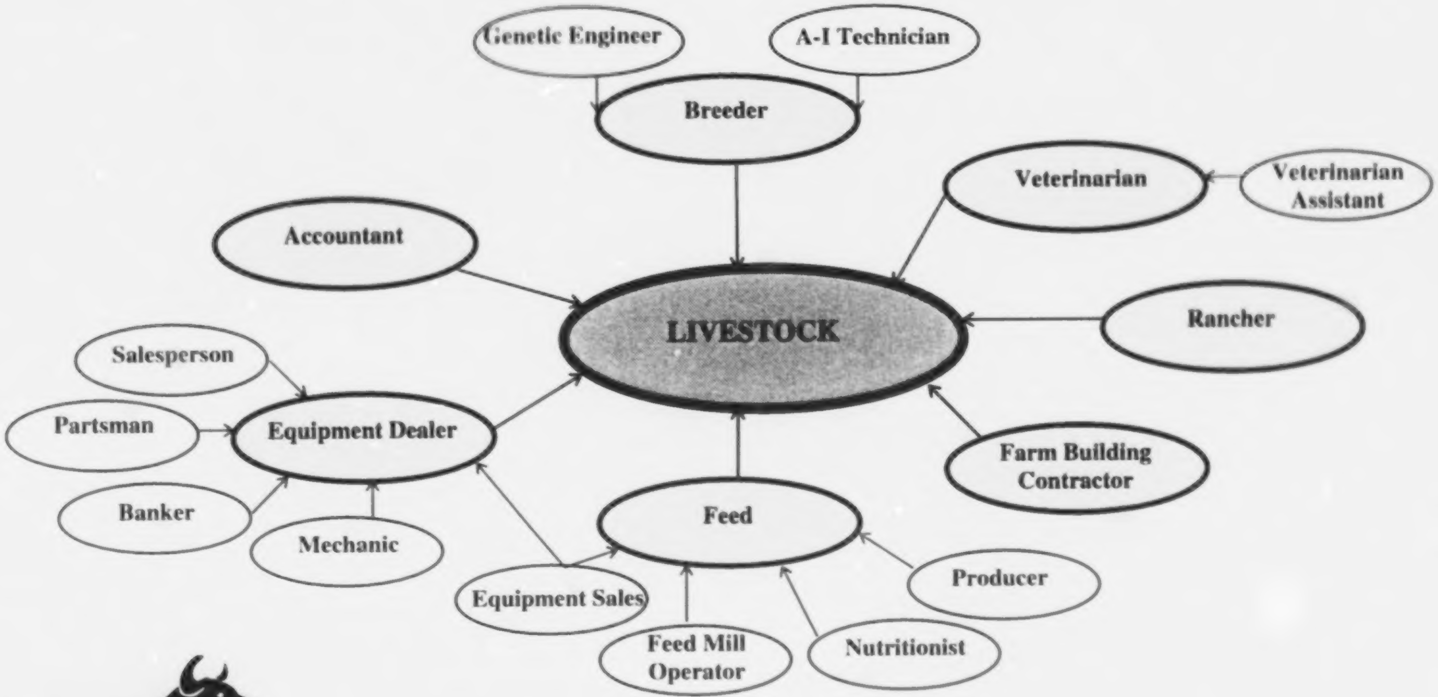
SAMPLE FLOW CHART: Production Basics AGR1030–1

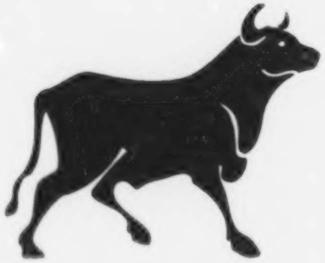
Agriculture Commodity: Sugar Beets


MARKETING BOARD
Allotted Acres
Sugar Beet Seed Farm
Sugar Beet Seed for Allotted Acres
Soil Analysis
Fertilizer
Irrigation
Sugar Beet Planter (machine) FARMER
Crop Spraying
CROP GROWTH
Topping
HARVESTING Out of Ground
PILE BEETS
Frost
SUGAR BEETS FOR PROCESSING

SAMPLE CONCEPT MAP/WEB: Careers in Agriculture Production AGR1030–2

Agriculture Commodity: Beef


Genetic Engineer
A-I Technician
Breeder
Veterinarian
Veterinarian Assistant
Accountant
LIVESTOCK
Rancher
Salesperson
Partsman
Equipment Dealer
Banker
Mechanic
Farm Building Contractor
Feed
Producer
Equipment Sales
Feed Mill Operator
Nutritionist



1. Identify personal safety equipment that you must always wear when operating power landscape maintenance machines.

   Steel-toed boots, long pants, gloves, ear protection

2. Name two additional pieces safety equipment that may be required and identify the power machine(s) you must use it with.

   Eye protection – goggles, gloves, helmet, respiratory protection

3. Describe the correct procedure for stopping any power machine and tell why this procedure is necessary.

   Stop machine – remove spark plug attachment. Machine will not restart accidentally.

4. What must you know about a power machine before you start it?

   How to stop/shut off.

5. Some machines require a large operating distance. Name two such machines and explain why this distance is necessary.

   Machines that throw plant material – power edges, trimmers, mowers

6. Explain how you would respond in each of the following situations:

   a) your engine runs out of fuel half-way through a job

   Turn off machine, remove spark plug attachment, give 10-15 minute cool-down period, refuel.

   b) you are mowing grass and the grass is no longer being pulled into the bag because the bag is full

   Turn off machine, remove spark plug, remove bag, clean grass from under mower.

   c) a friend approaches you during the course of operating a power trimmer.

   Turn off the machine immediately.

STANDARD: Correct response to all items prior to operation of power maintenance equipment.

TASK CHECKLIST: Basic Landscape/Turf Care AGR1070–2

MAINTENANCE TASK *The student:*	Watering of Plants and/or Turf	Cultivation and Mulching of Plants	Corrective Pruning of Plants	Mowing, Trimming and Edging of Turfgrass	Control of Pests/Disease	Installation/ Removal of Plant Material
A. performs routine checks on plants/growth medium to determine the need for service	☐	☐	☐	☐	☐	☐
B. selects, assembles and calibrates appropriate equipment and/or materials as necessary to perform the maintenance service	☐	☐	☐	☐	☐	☐
C. performs the maintenance service by safely following established procedures	☐	☐	☐	☐	☐	☐
D. follows established guidelines for the safe use of hand and/or power equipment relevant to the service*	☐	☐	☐	☐	☐	☐
E. disassembles, cleans and/or stores equipment and/or materials used in the course of performing the service	☐	☐	☐	☐	☐	☐
F. demonstrates effective conservation practices and regard for the environment in providing the service	☐	☐	☐	☐	☐	☐

STANDARD IS 1 FOR TASKS A, B, C, E, AND F IN EACH OF THREE AREAS OF LANDSCAPE/TURFGRASS SERVICE

*** STANDARD IS 3 FOR TASK D (SAFE USE OF HAND AND/OR POWER EQUIPMENT)**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK CHECKLIST: Basic Floral Design **AGR1080–1**

CONDITIONING FRESH CUT FLOWERS AND GREENERY

(PERFORMANCE STANDARD IS 1 IN EACH TASK AREA)

The student:

☐ unpacks incoming stock and inspects for disorders/irregularities

☐ prepares containers for incoming stock

☐ mixes preservatives

☐ uses correct water temperature to condition materials

☐ cuts stems under water

☐ cuts stems to correct length

☐ stores materials at correct temperature

☐ incorporates recutting of stems and replacement of solutions as part of regular work routine

☐ handles and cleans emergency spills, and maintains facilities in a sanitary condition

☐

☐

☐

HANDLING DRIED AND FABRIC FLOWERS AND GREENERY

(PERFORMANCE STANDARD IS 1 IN EACH TASK AREA)

The student:

☐ bundles materials correctly

☐ hangs/boxes materials in a manner that prevents breaking, soiling and fading

☐ organizes materials in an effective manner

☐

☐

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS

(PERFORMANCE STANDARD IS 1 IN EACH TASK AREA)

The student:

☐ packages materials to protect, stabilize and preserve during transport

☐ packages materials without causing damage to floral stock

☐ packages materials to withstand adverse weather conditions

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS (continued)

☐ includes care tags, preservatives, etc., in packaging

☐ keeps packaging neat and clean in appearance

☐ performs tasks in order of priority

☐

☐

USING CONSTRUCTION MATERIALS

(PERFORMANCE STANDARD IS 1 IN EACH TASK AREA)

The student:

☐ ties floral bows using ribbons of different width

☐ wraps wires of different gauge using floral tape

☐

☐

CONSTRUCTING FLORAL ARRANGEMENTS
(PERFORMANCE STANDARD IS 1 IN EACH TASK AREA)

The student:

- ☐ follows and implements a plan for constructing a single bud vase
- ☐ follows and implements a plan for constructing a triple bud vase
- ☐ follows and implements a plan for constructing a single boutonniere
- ☐ follows and implements a plan for constructing a triple corsage
- ☐ follows and implements a plan for constructing a rose bowl
- ☐ follows and implements a plan for constructing a simple mound arrangement
- ☐ follows and implements a plan for constructing a triangle arrangement of a dozen roses
- ☐
- ☐
- ☐

STANDARD IS 1 IN EACH APPLICABLE TASK AREA

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

REFLECTIONS/COMMENTS:

PRODUCT ASSESSMENT: Basic Floral Design **AGR1080–2**

PROJECT STANDARDS	PROJECT: **Single Bud Vase**	PROJECT: **Triple Bud Vase**	PROJECT: **Single Boutonniere**	PROJECT: **Triple Corsage**	PROJECT: **Rose Bowl**	PROJECT: **Mound Arrangement**	PROJECT: **Triangle Arrangement**
Application of Design Principles							
• colour harmony is appropriate	☐	☐	☐	☐	☐	☐	☐
• composition and arrangement are correct	☐	☐	☐	☐	☐	☐	☐
• balance and symmetry are achieved	☐	☐	☐	☐	☐	☐	☐
• proportion and scale are evident	☐	☐	☐	☐	☐	☐	☐
Quality of Workmanship							
• materials used were appropriate and consistent with design concept	☐	☐	☐	☐	☐	☐	☐
• secure in construction and finished on all sides	☐	☐	☐	☐	☐	☐	☐
• construction is concealed	☐	☐	☐	☐	☐	☐	☐
• all floral materials placed at proper height, depth and/or angle	☐	☐	☐	☐	☐	☐	☐
• wrapping is smooth, snug and tight	☐	☐	☐	☐	☐	☐	☐
• performs check on final product for quality, quantity and/or appeal	☐	☐	☐	☐	☐	☐	☐
PROJECT RATING							

STANDARD IS 1 IN EACH APPLICABLE TASK AREA

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

REFLECTIONS/COMMENTS

ASSESSMENT CRITERIA: Components of a Marketing Strategy AGR1090–1

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Scheduling Tasks** ☐ defines the task ☐ identifies task components and organizes them into a logical sequence ☐ uses time effectively ☐ ______________________________
4 3 2 1 0	**Identifying Marketing Components** ☐ accesses basic in-school/community information sources regarding the product/service and potential customers/markets ☐ interprets and organizes information into a logical sequence ☐ describes the product/service, customer and target market ☐ assesses commodity supply and/or suitability of product/service suppliers ☐ identifies existing sources of competition within the market place ☐ describes marketing alternative for the product/service; e.g.: – extensive (open) – selective (niche) ☐ describes the pricing strategy based on market analysis and cost factors ☐ describes the packaging/labelling, advertising, promotion and distribution strategy ☐ identifies intended marketing outcomes and/or product/service sales ☐ summarizes opportunities and challenges relevant to the marketing plan ☐ ______________________________
4 3 2 1 0	**Assessing and Communicating the Marketing Strategy** ☐ presents the marketing strategy in a logical sequence using one or more communication media ☐ uses correct grammar and technical terms ☐ assesses the current and potential achievement of marketing goals ☐ make summative statements regarding strengths/weaknesses and general success of the marketing plan ☐ ______________________________

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

ASSESSMENT CRITERIA: Product/Market Development AGR1090–2

Rating	ASSESSMENT CRITERIA
4 3 2 1 0	*The student:* **Scheduling Tasks** ☐ sets goals and follows instructions accurately ☐ identifies major tasks and organizes them into a logical sequence ☐ revises work plan to accommodate changing requirements ☐ uses time effectively ☐ ________________
4 3 2 1 0	**Gathering Information** ☐ poses important questions regarding an existing product or market ☐ gathers background information regarding the product/market using basic in-school/community information sources ☐ uses one or more information-gathering techniques ☐ distinguishes between fact and fiction/opinion/theory ☐ ________________
4 3 2 1 0	**Developing the Plan** ☐ identifies an existing product or market ☐ explains the current status of the product or market; e.g., Who does the existing product/market serve? ☐ outlines plans for altering the product, developing a new/related product, or expanding the market ☐ provides a rationale for product development or market expansion based on social/ethical, economic and personal considerations ☐ develops a strategy for testing the product or surveying the market ☐ ________________
4 3 2 1 0	**Presenting the Plan** ☐ presents product/market plans in a logical sequence ☐ explains basic principles of product/market development ☐ uses correct grammatical convention and technical terms ☐ cites three or more relevant information sources ☐ ________________ ☐ reflects on the strengths/limitations of the plan for product/market development

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.
N/A	Not applicable

REFLECTIONS/COMMENTS:

SAMPLE CHART: Product Development in the Agriculture/Horticulture Industry **AGR1100–1**

NEED/PROBLEM	RESULTING PRODUCT/PROCESS/SERVICE	CONTRIBUTING RESEARCH/TECHNOLOGY
Foods With Longer Shelf Life		
Higher Yield Grains		
Disease-resistant Plant Varieties		
Leaner Meat		
Management of Animal Wastes		
New Vegetable Varieties		
Longer-lasting Cut Flowers		
Water/Soil Pollution		
High Fibre Foods		
Low Cholesterol Snacks		
Soil Conservation		

STANDARD: Identify products and technologies developed in response to each of ten problems/needs.

RESEARCH PROCESS: Applications of Science and Technology AGR1100–2

TASK	OBSERVATION/RATING				
Preparation and Planning	4	3	2	1	N/A
Information Gathering and Processing	4	3	2	1	N/A
Content	4	3	2	1	N/A
Collaboration and Teamwork	4	3	2	1	N/A
Information Sharing	4	3	2	1	N/A

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.
N/A	Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and follows instructions accurately
☐ adheres to established timelines
☐ responds to directed questions and follows necessary steps to find answers
☐ uses time effectively

Information Gathering and Processing

☐ accesses basic school/community information sources
☐ uses one or more information-gathering techniques
☐ interprets and organizes information in a logical sequence
☐ records information accurately using correct technical terms
☐ distinguishes between fact and fiction/opinion/theory
☐ responds to feedback when current approach is not working

Content

☐ describes the development of one or more technologies currently used in agriculture/horticulture production; e.g.:
  – defines a need/problem
  – explains processes/machines/species developed to address the need
☐ explains benefits and costs relevant to applications of the production technology; e.g.:
  – social
  – economic
  – environmental

Content (continued)

☐ describes the development of one or more technologies currently used in agriculture/horticulture processing; e.g.:
  – defines a need/problem
  – explains processes/machines/species developed to address the need
☐ explains benefits and costs relevant to applications of the processing technology; e.g.:
  – social
  – economic
  – environmental
☐ describes the development of one or more technologies currently used in agriculture/horticulture marketing; e.g.:
  – defines a need/problem
  – explains processes/tools developed to address the need
☐ explains benefits and costs relevant to applications of the marketing technology; e.g.:
  – social
  – economic
  – environmental

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members

Information Sharing

☐ demonstrates effective use of one or more communication media:
e.g., written, oral, audio-visual
☐ communicates information in a logical sequence
☐ uses correct grammatical convention and technical terms
☐ cites three or more basic information sources

REFLECTION/COMMENTS:

KNOWLEDGE/APPLICATION ASSESSMENT: Water Management Practices AGR1110–1

Assessment Criteria and Conditions:

- explain three or more practices used in Alberta to manage limited and/or excess water supplies for agriculture.

Suggested Reference(s):

- *Agriscience and Technology*
- *Water and Agriculture*
- *Water Management in Alberta*

STANDARD: Respond to a minimum standard of 1 on the rating scale

Rating Scale

4 meets project/task objectives in a self-directed manner. Provides explanations and critical judgements based on a superior knowledge base. Demonstrates an understanding of relevant concepts and related issues.

3 meets project/task objectives in a self-directed manner. Provides explanations and comparisons of relevant concepts using precise terminology. Requires little or no prompting.

2 meets project/task objectives with limited assistance in planning and selecting and using resources. Applies knowledge of concepts in different situations using correct terminology. Requires occasional prompting.

1 completes task as directed, demonstrating basic skills/completeness by following a guided course of action. Uses simple recall to demonstrate basic knowledge of concepts. Requires prompting.

0 does not complete task, or is unable to provide a suitable response.

N/A Not applicable

Background Information

See *Agriscience and Technology*:
- Chapter 7: Plant Management Technologies
- Chapter 17: Protection of Natural Resources.

Contact Alberta Environmental Protection for copies of:
- *Water and Agriculture*
- *Water Management in Alberta*
- *Water in Alberta: The Living Flow*.

Contact local industry organizations for information and resources on water management that are specific to an agriculture enterprise. See the Learning Resource Guide (Section I) for a listing of industry contacts.

Sample Questions/Activities

1. **Describe the nature and extent of water resources in different regions of Alberta, and their potential to support agriculture.**
2. **Explain the water cycle and its role in replenishing water supplies.**
3. **Describe three or more practices used in Alberta to manage limited and/or excess water supplies for agriculture;** e.g.:
   - irrigation, storage, conservation practices
   - diversion, drainage, flood control.
4. **Cite two or more examples of legislation used in Alberta to manage water resources for agriculture;** e.g.:
   - water rights
   - pollution control.
5. **Propose strategies for managing water within a specific rural, urban and/or indoor agriculture environment.**
6. **Prepare a glossary of terms relevant to water management in Alberta.**

RESEARCH PROCESS: Rural and Urban Land Use AGR1110–2

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

- ☐ sets goals and follows instructions accurately
- ☐ adheres to established timelines
- ☐ responds to directed questions and follows necessary steps to find answers
- ☐ uses time effectively

Information Gathering and Processing

- ☐ accesses basic school/community information sources
- ☐ uses one or more information-gathering techniques
- ☐ interprets and organizes information in a logical sequence
- ☐ records information accurately using correct technical terms
- ☐ distinguishes between fact and fiction/opinion/theory
- ☐ responds to feedback when current approach is not working

Content

- ☐ provides examples of five rural land uses and factors involved in making each land use decision
- ☐ provides examples of five urban land uses and factors involved in making each land use decision

Content (continued)

- ☐ defines and gives examples of multiple land use in Alberta
- ☐ given a specific rural or urban land site, identifies:
  - – alternatives regarding its use
  - – benefits/costs relevant to each alternative
- ☐ develops goals, a plan and a rationale for the use of a specific rural or urban land site
- ☐ constructs a diagram/model that illustrates land use planning principles relevant to the site
- ☐ ____________________
  ____
- ☐ ____________________
  ____

Collaboration and Teamwork

- ☐ cooperates with group members
- ☐ shares work appropriately among group members

Information Sharing

- ☐ demonstrates effective use of one or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicates information in a logical sequence
- ☐ uses correct grammatical convention and technical terms
- ☐ cites three or more basic information sources

REFLECTIONS/COMMENTS

POSITION PAPER: Resource Management AGR1110-3

TASK	OBSERVATION/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/Reporting	4	3	2	1	0	N/A

STANDARD IS 1 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and follows instructions accurately
☐ responds to directed questions and follows necessary steps to find answers
☐ accesses basic in-school/community information sources
☐ interprets and organizes information into a logical sequence
☐ records information accurately using correct technical terms
☐ uses time effectively

Content

☐ provides a clear and concise statement of an issue regarding water, soil or land use
☐ examines social, political, scientific, ethical, economic and/or environmental perspectives related to the issue
☐ provides detailed examples of the consequences of previous human activities relevant to the issue
☐ develops a logical argument and conclusion regarding the issue, and provides a rationale for the position taken

Content (continued)

☐ develops a plan of action for dealing with the issue at local and/or global levels
☐ provides a glossary of terms relevant to the issue
☐ ______________________________

Presenting/Reporting

☐ demonstrates effective use of one or more communication media:
e.g., *__Written__: spelling, punctuation, grammar basic format*
__Oral__: voice projection, body language
__Audio-visual__: techniques, tools
☐ uses correct grammatical convention and technical terms through proofreading/editing
☐ provides an introduction that describes the purpose of the project
☐ communicates information in a logical sequence
☐ states a conclusion based on a summary of facts
☐ provides a reference list of three or more basic information sources

REFLECTIONS/COMMENTS:

RESEARCH PROCESS: Animal Health and Well-Being AGR2020–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and establishes steps to achieve them
☐ creates and adheres to useful timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively

Information Gathering and Processing

☐ accesses a range of relevant in-school/community resources
☐ uses a range of information-gathering techniques
☐ interprets, organizes and combines information into a logical sequence
☐ records information accurately with appropriate supporting detail and using correct technical terms
☐ determines accuracy/currency/reliability of information sources
☐ gathers and responds to feedback regarding approach to the task

Content

☐ identifies and describes indicators of health in a selected animal species; e.g.:
  - physical signs
  - normal/abnormal vital signs
  - symptoms of disease and parasites
  - behaviour

Content (continued)

☐ describes normal/abnormal animal physiology and anatomy
☐ describes normal/abnormal feed sources, and the impact of nutrient deficiencies on animal health
☐ identifies agents and sources of stress for animals, and their implications for health
☐ describes characteristics of a healthful animal environment, and conditions that may place an animal's health or safety at risk; e.g.:
  - sanitation
  - housing
  - methods of restraint

☐ ______________________________
____
____

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ negotiates solutions to problems

Information Sharing

☐ demonstrates effective use of two or more communication media:
e.g., written, oral, audio-visual
☐ communicates ideas in a logical sequence with sufficient supporting detail
☐ maintains acceptable grammatical and technical standards
☐ cites five or more relevant information sources

REFLECTIONS/COMMENTS:

TASK CHECKLIST: Animal Husbandry and Health Care AGR2020–2

FEEDING

The student:

- ☐ describes the role of protein, energy, vitamins, mineral and water in animal diet
- ☐ monitors animals and pens for adequate water supply/consumption and ensures animals are properly watered
- ☐ implements and monitors an appropriate feeding routine
- ☐ explains rules of thumb for quantities/volumes consumed daily or weekly
- ☐ identifies feed requirements for specific situations (e.g., growth/fattening, pregnant/lactating mothers)
- ☐ feeds at correct times
- ☐ operates required feeding equipment
- ☐ performs routine health checks during feeding
- ☐ performs routine inspection/cleaning/maintenance of feed boxes and troughs during feeding
- ☐ identifies nutritional deficiencies, and explains the role of food additives and growth stimulants in animal diet
- ☐ ______________________________

HANDLING AND RESTRAINT

The student:

- ☐ describes normal animal behaviours in different situations (e.g., when eating, when confined, during breeding)
- ☐ identifies factors that influence animal handling techniques (e.g., animal instincts, environmental factors, tameness, breed/gender/age differences)
- ☐ demonstrates effective animal handling technique (e.g., body stance/movement, appropriate use of force, control of noise)
- ☐ uses animal handling aids/facilities in a proper and safe manner (e.g., prods, canes, whistles, chutes, pens, gates)
- ☐ uses animal restraint equipment in a proper and safe manner (e.g., cattle squeeze, hog crate, head gate)
- ☐ demonstrates ability to handle animals in groups and/or in large areas (e.g., herding, droving, moving)
- ☐ demonstrates techniques that minimize personal hazards associated with animal handling (e.g., protective gear, keeping alert)
- ☐ ______________________________

HOUSING

The student:

- ☐ demonstrates appropriate and safe use of confinement structures (e.g., buildings, fences, corrals)
- ☐ monitors physical environment, ensuring appropriate light, temperature, air circulation and space variables
- ☐ maintains and makes basic repairs to fencing and/or confinement structures to ensure animal safety
- ☐ cleans and disinfects animal pens and other confinement/holding structures
- ☐ ensures animal comfort through supply of appropriate bedding material
- ☐ implements and maintains a manure handling system
- ☐ ______________________________
- ☐ ______________________________

HEALTH AND WELL-BEING

The student:

- ☐ describes signs of animal health (e.g., movement, alertness, body appearance, eating habits)
- ☐ identifies symptoms of ill health, parasites and/or disease (e.g., respiration, movement, eating habits, body appearance, animal sounds)
- ☐ identifies symptoms and treatments for common pests, diseases and ailments that affect the health of animals
- ☐ identifies common situations that may be confused with ill health (e.g., heat/cold, estrus cycle, stress)
- ☐ administers basic treatments for common pests, diseases and/or ailments (e.g., injections, dusting, medication)
- ☐ identifies and controls agents/sources of stress for the animal
- ☐ ______________________________
- ☐ ______________________________

STANDARD: Achieve a minimum performance rating of 2 in each area of animal care as outlined on the checklist.

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

ASSESSMENT CRITERIA: Animal Welfare AGR2020–3

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Gathers Background Information** ☐ defines the task ☐ identifies task components and organizes them into a logical sequence ☐ accesses basic in-school/community information sources regarding animal welfare ☐ provides a review of historical concerns regarding animal welfare ☐ compares animal welfare and animal rights ☐ ________
4 3 2 1 0	**Develops a Strategy for Maintaining Animal Welfare** ☐ identifies ethical, economic and social perspectives that influence animal welfare ☐ describes welfare needs of an animal; e.g.: – water and food – space, air quality, temperature and light – shelter and confinement structures – freedom from stress, hunger, disease, pain and abuse ☐ describes indicators of health in the animal; e.g.: – physical signs of good and poor health – normal and abnormal vital signs – symptoms of disease and parasites – normal and abnormal behaviour ☐ describes current codes of practice regarding animal care, handling and restraint ☐ considers alternatives and consequences regarding different approaches to caring for the animal ☐ develops a plan of action to address welfare needs of the animal ☐ ________
4 3 2 1 0	**Assesses and Communicates the Strategy** ☐ presents the animal welfare plan in a logical sequence using one or more communication media ☐ uses correct grammar and technical terms ☐ make summative statements regarding strengths/weaknesses and general feasibility of the animal welfare plan ☐ outlines a protocol for responding to an issue regarding animal welfare ☐ ________

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.
N/A	Not applicable

REFLECTIONS/COMMENTS

BEST COPY AVAILABLE

TASK CHECKLIST: Field Crops 1 AGR2030–1

PRODUCTION TASK *The student:*	Soil Preparation	Seeding/ Propagation	Crop Cultivation	Irrigation	Fertilizing	Pest/Weed/Disease Control	Harvesting
A. performs routine checks on condition of crop plants/growth medium to determine crop production requirements	☐	☐	☐	☐	☐	☐	☐
B. selects, assembles and calibrates/adjusts appropriate equipment and/or materials as necessary to perform the production task	☐	☐	☐	☐	☐	☐	☐
C. performs the production task by following established procedures and using equipment/materials in an efficient manner	☐	☐	☐	☐	☐	☐	☐
D. follows established guidelines for the safe use of hand and/or power equipment in performing crop production tasks*	☐	☐	☐	☐	☐	☐	☐
E. disassembles, cleans and/or stores equipment and/or materials used in the course of performing the production task	☐	☐	☐	☐	☐	☐	☐
F. performs routine safety checks on hand and power equipment, and cleans/sharpens/ lubricates/adjusts as required	☐	☐	☐	☐	☐	☐	☐
G. demonstrates effective conservation practices and regard for the environment throughout crop production cycle	☐	☐	☐	☐	☐	☐	☐

STANDARD IS 2 FOR TASKS A, B, C, E, F AND G IN EACH OF TWO AREAS OF CROP PRODUCTION

*** STANDARD IS 3 FOR TASK D (SAFE USE OF HAND AND/OR POWER EQUIPMENT)**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

BEST COPY AVAILABLE

IDENTIFICATION GUIDE: Basic Anatomy and Physiology **AGR2040–1**

HEAD AND NECK AREAS	Name of Structure	Basic Function
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

LEG AND FOOT AREAS	Name of Structure	Basic Function
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

BODY	Name of Structure	Basic Function
Basic Skeletal Structure:		
	☐	☐
	☐	☐
	☐	☐
	☐	☐
Digestive System:		
	☐	☐
	☐	☐
	☐	☐
	☐	☐
Respiratory System		
	☐	☐
	☐	☐
	☐	☐
	☐	☐
Mammary/Reproductive System:		
	☐	☐
	☐	☐
	☐	☐
	☐	☐

STANDARD: Identify by name and function 15 basic structural parts of particular importance in the production system. Structural parts to include those located in the head/neck, body and leg/foot areas.

REFERENCE GUIDE: ***Skill Training Profiles, Alberta Green Certificate Training Program***

KNOWLEDGE/APPLICATION ASSESSMENT: Vital Life Processes AGR2040–2

Assessment Criteria and Conditions:

- explain vital life processes of respiration, digestion, excretion, growth and reproduction for a livestock species, and the significance of each in the production system

Suggested Reference(s):

- *Agriscience: Fundamentals and Applications*
- *Alberta Green Certificate Skill Profiles and Performance Standards*

STANDARD : Respond to a minimum standard of 2 on the rating scale

Rating Scale

4 meets project/task objectives in a self-directed manner. Provides explanations and critical judgements based on a superior knowledge base. Demonstrates an understanding of relevant concepts and related issues.

3 meets project/task objectives in a self-directed manner. Provides explanations and comparisons of relevant concepts using precise terminology. Requires little or no prompting.

2 meets project/task objectives with limited assistance in planning and in selecting and using resources. Applies knowledge of concepts in different situations using correct terminology. Requires occasional prompting.

1 completes task as directed, demonstrating basic skills/completeness by following a guided course of action. Uses simple recall to demonstrate basic knowledge of concepts. Requires prompting.

0 does not complete task, or is unable to provide a suitable response.

N/A Not applicable

Background Information	**Sample Questions/Activities**
See *Agriscience: Fundamentals and Applications*, Section 8 - Animal Sciences. See *Alberta Green Certificate Skill Profiles and Performance Standards* for: • Beef • Dairy • Cow-Calf • Sheep • Swine. Contact local industry organizations for information and resources specific to a livestock species. See the Learning Resource Guide (Section I) for a listing of industry contacts.	**1. Explain vital life processes and terminology related to:** – respiration – digestion – waste excretion – growth – reproduction. **2. For a specific animal species, draw, label and explain the functions of structures within the:** – respiratory system – digestive system – reproductive system. **3. Compare the digestive systems of ruminants, nonruminants and poultry. Note the parts that are alike and those that are different.** **4. Explain the significance of animal physiology and related structures within a particular species to the production system;** e.g.: – cattle and sheep have rumens that enable them to digest grass and crop wastes – milk production is dependent on the udder of a dairy cow – muscling for meat production is important in beef, hog and poultry.

RESEARCH PROCESS: Animal Breeds AGR2040–3

TASK	Observation/Rating
Preparation and Planning	4 3 2 1 0 N/A
Information Gathering and Processing	4 3 2 1 0 N/A
Content	4 3 2 1 0 N/A
Collaboration and Teamwork	4 3 2 1 0 N/A
Information Sharing	4 3 2 1 0 N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ sets goals and establishes steps to achieve them
- ☐ creates and adheres to useful timelines
- ☐ uses personal initiative to formulate questions and find answers
- ☐ plans and uses time effectively

Information Gathering and Processing
- ☐ accesses a range of relevant in-school/community resources
- ☐ uses a range of information-gathering techniques
- ☐ interprets, organizes and combines information into a logical sequence
- ☐ records information accurately with appropriate supporting detail and using correct technical terms
- ☐ determines accuracy/currency/reliability of information sources
- ☐ gathers and responds to feedback regarding approach to the task

Content
- ☐ identifies and describes common classes and breeds of a livestock, poultry or speciality animal
- ☐ identifies positive and negative genetic traits of a livestock, poultry or speciality animal

Content (continued)
- ☐ identifies breeds of livestock, poultry or specialty animals suited to specific production and/or market applications
- ☐ explains principles of heredity and how animal characteristics are passed from generation to generation; e.g.:
  - – dominant and recessive traits
  - – selection criteria and procedures
- ☐ outlines record keeping systems for animal ancestry and history, and procedures used to maintain quality of the animal breed; e.g.:
  - – pedigrees, breeding records, parturition records
  - – breed standards, showing and judging systems

Collaboration and Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems

Information Sharing
- ☐ demonstrates effective use of two or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicates ideas in a logical sequence with sufficient supporting detail
- ☐ maintains acceptable grammatical and technical standards
- ☐ cites five or more relevant information sources.

REFLECTIONS/COMMENTS:

TASK CHECKLIST: Livestock/Poultry 1

AGR2040–4

FEEDING

The student:

- ☐ monitors animals and pens for adequate water supply/consumption and ensures animals are properly watered
- ☐ selects correct ration and quantity of food for animal
- ☐ explains rules of thumb for quantities/volumes consumed daily or weekly
- ☐ feeds at correct times
- ☐ operates required feeding equipment
- ☐ performs routine health checks during feeding
- ☐ performs routine inspection/cleaning/maintenance of feed boxes and troughs during feeding

HANDLING AND RESTRAINT

The student:

- ☐ demonstrates effective animal handling technique (e.g., body stance/movement, appropriate use of force, control of noise)
- ☐ uses animal handling aids in a proper and safe manner (e.g., prods, whips, canes)
- ☐ uses animal handling facilities in a proper and safe manner (e.g., chutes, pens, gates)
- ☐ uses animal restraint equipment in a proper and safe manner (e.g., cattle squeeze, hog crate, head gate)
- ☐ demonstrates ability to handle animals in groups and/or in large areas (e.g., herding, droving, moving)

HOUSING

The student:

- ☐ monitors physical environment, ensuring appropriate light, temperature, air circulation and space variables
- ☐ provides appropriate fencing and shelter to ensure animal safety
- ☐ cleans and disinfects trailers, pens and other animal holding structures
- ☐ ensures animal comfort through supply of bedding material

CARE FOR YOUNG

The student:

- ☐ demonstrates appropriate technique to catch/hold baby animals
- ☐ cleans new born animals
- ☐ assists new born animals to nurse

HEALTH AND WELFARE

The student:

- ☐ identifies basic symptoms of ill health/disorders in:
  - respiration
  - movement
  - eating habits
  - physical appearance (e.g., stomach, coat, eyes, ears)
  - sounds
  - manure and urine analysis
- ☐ identifies symptoms and treatments for common pests, diseases and ailments that affect the health of animals within the industry
- ☐ administers basic treatments for common pests, diseases and/or ailments (e.g., injections, dusting)

BREEDING OPERATIONS

The student:

- ☐ explains reproductive processes characteristic of the animal:
  - estrus cycle
  - gestation period
  - natural service/artificial insemination
  - normal birth process
  - age criteria for breeding
- ☐ identifies stages/signs of estrus
- ☐ demonstrates appropriate care and handling of animals during the breeding season
- ☐ explains/applies appropriate reproductive technologies (e.g., artificial insemination, embryo transfer, estrus manipulation, gender selection)

STANDARD IS 2 FOR THE ANIMAL CARE TASKS LISTED IN THREE AREAS OF ANIMAL PRODUCTION

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

PORTFOLIO: Profile of an Agrifood Industry AGR2050–1

TASK	OBSERVATION/RATING
Allocating Time and Materials	4 3 2 1 0 N/A
Profiling the Industry	4 3 2 1 0 N/A
Presenting and Critiquing	4 3 2 1 0 N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Allocating Time and Materials

☐ develops and follows a schedule of activities for preparing an agrifoods portfolio
☐ uses personal initiative to formulate questions and find answers
☐ accesses a range of relevant in-school and community resources
☐ interprets, organizes and combines information into a logical sequence
☐ records information accurately using appropriate technical terms and supporting detail
☐ selects and uses appropriate equipment/materials
☐ plans and uses time effectively
☐ assesses and refines approach to task and project status based on feedback and reflection

Profiling the Industry

☐ constructs flowcharts/diagrams that explain the stages and steps in processing the commodity and developing the value-added product or service
☐ constructs models/drawings of technological systems used in transportation, storage and processing
☐ assesses the benefits/costs of technological systems used and potential advantages of alternative technologies
☐ assesses the impact of transportation and storage requirements on industry location

Profiling the Industry (continued)

☐ explains quality control techniques, including methods used to inspect raw materials and test product quality and uniformity
☐ demonstrates one or more methods of preserving a perishable product; e.g.:
  - blanching and canning
  - dehydration and freeze-drying
  - fermentation
  - refrigeration and freezing
  - atmosphere control (vacuum seal, carbon dioxide seal)

☐ explains systems used to package, grade and label products within the industry
☐ identifies safety and environmental standards that influence industry operations
☐ develops a glossary of terms characteristic of the agrifood industry

Presenting and Critiquing

☐ demonstrates effective use of two or more communication media in presenting the portfolio: *e.g., written, oral, audio-visual*
☐ communicates ideas in a logical sequence with sufficient supporting detail
☐ maintains acceptable grammatical and technical standards
☐ provides an introduction that describes the purpose and scope of the portfolio
☐ relates final outcomes and products to original purpose, identifying strengths and areas for improvement
☐ cites five or more relevant information sources

REFLECTIONS/COMMENTS

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TASK CHECKLIST: Landscape/Turf Management 1 AGR2060–1

MAINTENANCE TASK *The student:*	Watering and Fertilizing (measurement, application)	Cultivation and Mulching of Plants	Mowing, Trimming and Edging of Turfgrass	Pruning of Plants (corrective pruning, heading back, thinning, jump cutting)	Control of Pests/Disease	Spring/Winter Preparation (clean-up, repair, dethatching, aeration)	Installation of Plant Material (planting, transplanting, turf establishment, staking, guying))
A. performs routine checks on plants/growth medium to determine the need for service	☐	☐	☐	☐	☐	☐	☐
B. selects, assembles and calibrates appropriate equipment and/or materials as necessary to perform the maintenance service	☐	☐	☐	☐	☐	☐	☐
C. performs the maintenance service by safely following established procedures	☐	☐	☐	☐	☐	☐	☐
D. follows established guidelines for the safe use of hand and/or power equipment relevant to the service*	☐	☐	☐	☐	☐	☐	☐
E. disassembles, cleans and/or stores equipment and/or materials used in the course of performing the service	☐	☐	☐	☐	☐	☐	☐
F. performs routine safety checks on hand and power equipment, and cleans/sharpens/lubricates as required	☐	☐	☐	☐	☐	☐	☐
G. demonstrates effective conservation practices and regard for the environment in providing the service	☐	☐	☐	☐	☐	☐	☐

STANDARD IS 2 FOR TASKS A, B, C, E, F AND G IN EACH OF FOUR AREAS OF LANDSCAPE/ TURFGRASS SERVICE

*** STANDARD IS 3 FOR TASK D (SAFE USE OF HAND AND/OR POWER EQUIPMENT)**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

RESEARCH PROCESS: Origin, History and Conformation of the Horse AGR2070–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ sets goals and establishes steps to achieve them
- ☐ creates and adheres to useful timelines
- ☐ uses personal initiative to formulate questions and find answers
- ☐ plans and uses time effectively

Information Gathering and Processing
- ☐ accesses a range of relevant in-school/community resources
- ☐ uses a range of information-gathering techniques
- ☐ interprets, organizes and combines information into a logical sequence
- ☐ records information accurately with appropriate supporting detail and using correct technical terms
- ☐ determines accuracy/currency/reliability of information sources
- ☐ gathers and responds to feedback regarding approach to the task

Content
- ☐ identifies and describes different types of benefits associated with horses; e.g.:
  - – pleasure
  - – companionship
  - – performance
  - – breeding

Content (continued)
- ☐ describes the origin and history of horses, and factors that led to their domestication
- ☐ describes the characteristics and functions of basic external parts of the horse
- ☐ analyzes and explains conformational features of major body parts; e.g.:
  - – head and neck
  - – fore limb and hind limb
- ☐ identifies factors determining a horse's balance
- ☐ ______________________________
  ____
- ☐ ______________________________
  ____

Collaboration and Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems

Information Sharing
- ☐ demonstrates effective use of two or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicates ideas in a logical sequence with sufficient supporting detail
- ☐ maintains acceptable grammatical and technical standards
- ☐ cites five or more relevant information sources

REFLECTIONS/COMMENTS:

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TASK CHECKLIST: Equine 1 — AGR2070–2

FEEDING PRACTICES

The student:

☐ monitors for adequate supply and consumption of water, roughage and concentrate
☐ selects correct ration and quantity of food
☐ explains rules of thumb for quantities/volumes consumed daily or weekly
☐ calculates and recognizes weights/volumes of feeds
☐ explains the importance of a regular feeding schedule
☐ establishes, implements and maintains a regular feeding schedule
☐ operates required feeding equipment
☐ performs routine health checks during feeding
☐ performs routine inspection/cleaning/maintenance of feed boxes and troughs during feeding
☐

HEALTH CARE PRACTICES

The student:

☐ identifies and compares characteristics/symptoms of a health and ill horse
☐ monitors and assesses vital signs of a horse, recognizing abnormalities
☐ identifies basic symptoms of ill health (e.g., respiration, movement, eating habits, physical appearance)
☐ demonstrates appropriate care for leg wounds on a horse
☐ describes appropriate care of a horse with:
  – colic
  – respiratory disease
☐ identifies health factors that indicate the need for veterinarian services
☐

HANDLING AND RESTRAINT

The student:

☐ demonstrates effective handling technique (e.g., body stance/movement, appropriate use of force, control of noise)
demonstrates appropriate techniques for approaching a horse
☐ uses handling aids in a proper and safe manner (e.g., prods, canes, whistles)
☐ demonstrates appropriate techniques for leading a horse
☐ uses animal handling facilities in a proper and safe manner (e.g., chutes, pens, gates)
☐ demonstrates appropriate techniques for tying a horse
☐ uses animal restraint equipment in a proper and safe manner
☐ demonstrates appropriate techniques for:
  – cleaning a horse's feet
  – grooming a horse
☐
☐

STANDARD:

ACHIEVE A MINIMUM PERFORMANCE RATING OF 2 IN EACH AREA OF TASK ASSESSMENT

REFLECTIONS/COMMENTS

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides client/ customer services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonably consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

RESEARCH PROCESS: Design Principles and Colour Theory AGR2080–1

TASK	Observation/Rating
Preparation and Planning	4 3 2 1 0 N/A
Information Gathering and Processing	4 3 2 1 0 N/A
Content	4 3 2 1 0 N/A
Collaboration and Teamwork	4 3 2 1 0 N/A
Information Sharing	4 3 2 1 0 N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ sets clear goals and establishes steps to achieve them
- ☐ creates and adheres to detailed timelines
- ☐ uses personal initiative to formulate questions and find answers
- ☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing
- ☐ accesses a range of relevant information sources and recognizes when additional information is required
- ☐ demonstrates resourcefulness in collecting data
- ☐ interprets, organizes and combines information in creative and thoughtful ways
- ☐ records information accurately with appropriate supporting detail and using correct technical terms
- ☐ recognizes underlying bias/assumptions/values in information sources
- ☐ assesses and refines approach to the task and project status based on feedback and reflection

Content
- ☐ explains and illustrates basic principles of:
  - arrangement and composition
  - balance and symmetry
  - proportion and scale
  - rhythm
  - harmony
  - depth and line
  - texture and focal emphasis

Content (continued)
- ☐ explains applications of colour to create mood and develop theme in floral arrangements
- ☐ uses the colour wheel to explain relationships among colours in the spectrum
- ☐ provides examples of:
  - monochromatic colour schemes
  - complementary colour schemes
  - analogous colour schemes
  - triadic colour schemes
- ☐ ____________________
  ____

Collaboration and Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems
- ☐ displays effective communication and leadership skills

Information Sharing
- ☐ demonstrates effective use of a variety of communication media:
  e.g., written, oral, audio-visual
- ☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
- ☐ maintains acceptable grammatical and technical standards
- ☐ gives evidence of adequate information gathering by citing relevant information sources

REFLECTIONS/COMMENTS

CONDITIONING FRESH CUT FLOWERS AND GREENERY (PERFORMANCE STANDARD IS 2 IN EACH TASK AREA)

The student:

- ☐ unpacks incoming stock and inspects for disorders/irregularities
- ☐ prepares containers for incoming stock
- ☐ mixes preservatives
- ☐ uses correct water temperature to condition materials
- ☐ cuts stems under water
- ☐ cuts stems to correct length
- ☐ stores materials at correct temperature
- ☐ incorporates recutting of stems and replacement of solutions as part of regular work routine
- ☐ handles and cleans emergency spills, and maintains facilities in a sanitary condition
- ☐
- ☐
- ☐

HANDLING DRIED AND FABRIC FLOWERS AND GREENERY (PERFORMANCE STANDARD IS 2 IN EACH TASK AREA)

The student:

- ☐ bundles materials correctly
- ☐ hangs/boxes materials in a manner that prevents breaking, soiling and fading
- ☐ organizes materials in an effective manner
- ☐
- ☐

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS (PERFORMANCE STANDARD IS 2 IN EACH TASK AREA)

The student:

- ☐ packages materials to protect, stabilize and preserve during transport
- ☐ packages materials without causing damage to floral stock
- ☐ packages materials to withstand adverse weather conditions

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS (continued)

- ☐ includes care tags, preservatives, etc., in packaging
- ☐ keeps packaging neat and clean in appearance
- ☐ performs tasks in order of priority
- ☐
- ☐

USING CONSTRUCTION MATERIALS (PERFORMANCE STANDARD IS 2 IN EACH TASK AREA)

The student:

- ☐ ties floral bows using ribbons of different width
- ☐ wraps wires of different gauge using floral tape
- ☐
- ☐

CONSTRUCTING FLORAL ARRANGEMENTS
(PERFORMANCE STANDARD IS 2 IN EACH TASK AREA)

The student:

☐ identifies and distinguishes between symmetrical and asymmetrical triangular arrangements

☐ identifies and distinguishes between horizontal and pyramidal centrepieces

☐ identifies different types of European arrangements:
  - ☐ presentation-style bouquet
  - ☐ cluster arrangement
  - ☐ vegetative arrangement
  - ☐ parallel arrangement
  - ☐ horgarth curve

☐ follows and implements a plan for constructing a symmetrical triangular arrangement

☐ follows and implements a plan for constructing an asymmetrical triangular arrangement

☐ follows and implements a plan for constructing a horizontal centrepiece

☐ follows and implements a plan for constructing a pyramidal centrepiece

☐ follows and implements a plan for constructing a European-style arrangement (e.g., presentation, cluster)

CONSTRUCTING FLORAL ARRANGEMENTS (continued)

☐ follows and implements a plan for constructing a second European style arrangement (e.g., vegetative, parallel)

☐

STANDARD IS 2 AS INDICATED IN EACH APPLICABLE TASK AREA

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

REFLECTIONS/COMMENTS:

BEST COPY AVAILABLE

PRODUCT ASSESSMENT: Floral Design 1 AGR2080–3

PROJECT STANDARDS	PROJECT: **Triangular Arrangement** (symmetrical)	PROJECT: **Triangular Arrangement** (asymmetrical)	PROJECT: **Horizontal Centrepiece**	PROJECT: **Pyramidal Centrepiece**	PROJECT: **European Arrangement** (e.g., presentation, cluster)	PROJECT: **European Arrangement** (e.g., vegetative, parallel)	PROJECT:
Application of Design Principles							
• colour harmony is appropriate	☐	☐	☐	☐	☐	☐	☐
• composition and arrangement are correct	☐	☐	☐	☐	☐	☐	☐
• balance and symmetry are achieved	☐	☐	☐	☐	☐	☐	☐
• proportion and scale are evident	☐	☐	☐	☐	☐	☐	☐
• rhythm and harmony are achieved	☐	☐	☐	☐	☐	☐	☐
• depth and/or line are evident	☐	☐	☐	☐	☐	☐	☐
• texture and/or focal emphasis are evident	☐	☐	☐	☐	☐	☐	☐
Quality of Workmanship							
• materials used were appropriate and consistent with design concept	☐	☐	☐	☐	☐	☐	☐
• secure in construction and finished on all sides	☐	☐	☐	☐	☐	☐	☐
• construction is concealed	☐	☐	☐	☐	☐	☐	☐
• all floral materials placed at proper height, depth and/or angle	☐	☐	☐	☐	☐	☐	☐
• wrapping is smooth, snug and tight	☐	☐	☐	☐	☐	☐	☐
• performs check on final product for quality, quantity and/or appeal	☐	☐	☐	☐	☐	☐	☐
PROJECT RATING							

STANDARD IS 2 IN EACH APPLICABLE TASK.

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

REFLECTIONS/COMMENTS

TASK CHECKLIST: Care of Indoor Plants **AGR2080–4**

MONITORING GROWTH MEDIA

The student:

☐ maintains appropriate depth of growth media

☐ top dresses and conditions growth media as required

☐

☐

WATERING AND FERTILIZING

The student:

☐ performs checks to determine appropriate moisture for plant growth

☐ applies required water when necessary

☐ drains excess water from plant

☐ identifies fertilizer components and their function

☐ suggests appropriate fertilizers for selected species and/or situations

☐

☐

CONTROLLING PESTS

The student:

☐ identifies and practices effective strategies for pest prevention

☐ identifies common plant pests; e.g.:
  - ☐ spider mite
  - ☐ mealy bug
  - ☐ scale
  - ☐ aphid
  - ☐ fungus gnats

☐ suggests appropriate eradication treatments

☐

☐

PRUNING AND WASTE REMOVAL

The student:

☐ maintains clean plants and display areas

☐ performs corrective pruning as required; e.g.:
  - ☐ removal of dead and/or broken branches
  - ☐ removal of dead or damaged leaves
  - ☐ removal of dead flowers

☐

PLANT ROTATION

The student:

☐ identifies appropriate plant locations for maintenance and health reasons; e.g.:
  - ☐ consider temperature requirements
  - ☐ consider light requirements

PLANT ROTATION (continued)

☐ replaces plants as required

☐ identifies appropriate plant locations for sales promotion; e.g.:
  - ☐ display purposes
  - ☐ stock storage
  - ☐ sales promotion

☐

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/ client services.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

ASSESSMENT CRITERIA: A Marketing Plan AGR2090–1

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Scheduling Tasks** ☐ defines the task ☐ sets goals and establishes steps to achieve them ☐ plans and uses time effectively ☐ ______________________
4 3 2 1 0	**Gathering Information** ☐ poses important questions regarding a new (or altered) product/service ☐ accesses a range of relevant in-school/community resources ☐ interprets, organizes and combines information into a logical sequence ☐ determines accuracy/currency/reliability of information sources ☐ ______________________
4 3 2 1 0	**Developing the Plan** ☐ designs and conducts a survey of consumer preferences for a new (or altered) product/service ☐ develops/packages/labels the product/service to address consumer preferences ☐ identifies local, national and/or international markets for the product/service ☐ establishes a viable marketing alternative(s) for the product/service; e.g.: – extensive (open) – selective (niche) ☐ establishes one or more strategies for promoting the product/service; e.g.: – advertising through the media – in-store samples/displays – trade shows ☐ summarizes opportunities and challenges relevant to the product and markets ☐ ______________________
4 3 2 1 0	**Presenting and Assessing the Plan** ☐ presents the plan in a logical sequence using two or more communication media: – market conditions that led to product development – steps involved in product development – recommended marketing alternatives and promotional strategies ☐ uses correct grammatical convention and technical terms ☐ makes summative statements regarding strengths/weaknesses and general feasibility of the plan for product and market development ☐ ______________________

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

TASK CHECKLIST: Controlled Growing Environments AGR2100–1

PRODUCTION TASK *The student:*	Temperature/ Humidity Control	Ventilation	Lighting/Shade Control	Use of Watering Systems	Use of Feeding Systems	Pest/Disease Control	Waste Disposal
A. performs routine checks on crop/livestock to determine production requirements	☐	☐	☐	☐	☐	☐	☐
B. selects, assembles and adjusts appropriate equipment and/or materials as necessary to perform production tasks	☐	☐	☐	☐	☐	☐	☐
C. performs production tasks by following established procedures and using equipment/materials in an efficient manner	☐	☐	☐	☐	☐	☐	☐
D. follows established guidelines for the safe use of hand and/or power equipment in performing production tasks*	☐	☐	☐	☐	☐	☐	☐
E. sanitizes the growing/living environment and disassembles/cleans/stores equipment and materials used in the course of performing production tasks	☐	☐	☐	☐	☐	☐	☐
F. demonstrates effective conservation practices and regard for the environment throughout the crop/livestock production cycle	☐	☐	☐	☐	☐	☐	☐

STANDARD IS 2 FOR TASKS A, B, C, E, AND F IN ALL OF THE IDENTIFIED AREAS OF ENVIRONMENTAL CONTROL/MANAGEMENT

*** STANDARD IS 3 FOR TASK D (SAFE USE OF HAND AND/OR POWER EQUIPMENT)**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK	Observation/Rating
Management	4 3 2 1 0 N/A
Teamwork	4 3 2 1 0 N/A
Equipment and Materials	4 3 2 1 0 N/A
Investigative Techniques	4 3 2 1 0 N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Management
- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time effectively
- ☐ adheres to routines procedures

Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems

Equipment and Materials
- ☐ selects and uses appropriate equipment/materials
- ☐ models safe procedures/techniques
- ☐ weighs and measures accurately
- ☐ practises proper sanitation procedures
- ☐ minimizes waste of materials
- ☐ advises of potential hazards and necessary repairs

Investigative Techniques
- ☐ gathers and applies information from a variety of sources
- ☐ describes the general characteristics of each horizon in a soil profile
- ☐ describes the parent materials for soil in each horizon, how it was formed, and how the soil changed over time

Investigative Techniques (continued)
- ☐ describes the influence of the five soil-forming factors on soil formation within each horizon; e.g.:
  - climate
  - living organisms
  - parent materials
  - topography
  - time
- ☐ relates the thickness of each horizon to drainage, vegetation and climatic factors
- ☐ identifies the fundamental components of soil and explains the relationship of each to soil productivity; i.e.:
  - minerals
  - organic matter
  - air
  - water
- ☐ identifies and locates soil zones of Alberta, and the characteristics of soils within each zone; i.e.:
  - grey
  - black
  - dark brown
  - brown
- ☐ observes relationships between vegetation type and soil characteristics on vegetation and soil zone maps of the prairies; i.e.:
  - Grassland
  - Aspen Parkland
  - Boreal Forest
  - Mixed Forest and Tundra

REFLECTIONS/COMMENTS:

LAB INVESTIGATIONS: Soil Texturing

AGR2120–2

TASK	Observation/Rating
Management	4 3 2 1 0 N/A
Teamwork	4 3 2 1 0 N/A
Equipment and Materials	4 3 2 1 0 N/A
Investigative Techniques	4 3 2 1 0 N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Management

- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time effectively
- ☐ adheres to routine procedures

Teamwork

- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems

Equipment and Materials

- ☐ selects and uses appropriate equipment/materials
- ☐ models safe procedures/techniques
- ☐ weighs and measures accurately
- ☐ practises proper sanitation procedures
- ☐ minimizes waste of materials
- ☐ advises of potential hazards and necessary repairs

Investigative Techniques

- ☐ gathers and applies information from a variety of sources
- ☐ identifies the three soil separates (i.e., sand, silt, clay) and describes the characteristics of each as they relate to the soil's:
  - suitability for plant growth
  - potential for erosion
  - ease of handling

Investigative Techniques (continued)

- ☐ manually estimates the relative percentages of sand, silt and clay in a soil sample; e.g.:
  - dry consistence test
  - moist cast test
  - ribbon test
- ☐ given the relative percentages of separates in a soil sample, uses the soil texture triangle to determine soil texture classification
- ☐ demonstrates relationships between soil texture and:
  - water-holding capacity
  - nutrient-holding capacity
  - use capability
- ☐ describes types of soil structure and their influence on:
  - soil tilth
  - seed germination and seedling development
  - root growth and penetration
  - water infiltration and soil aeration
  - susceptibility to erosion
  - soil compaction
- ☐ demonstrates procedures for protecting and building favourable soils structure
- ☐ explains effects of parent material and organic matter on soil colour
- ☐ relates soil colour parameters to:
  - textural and structural properties
  - soil productivity
- ☐ uses the Munsell colour chart to identify the colour name and notation for a soil sample

REFLECTIONS/COMMENTS:

TASK	Observation/Rating					
Management	4	3	2	1	0	N/A
Teamwork	4	3	2	1	0	N/A
Equipment and Materials	4	3	2	1	0	N/A
Investigative Techniques	4	3	2	1	0	N/A

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

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1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Management
- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time effectively
- ☐ adheres to routine procedures

Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates solutions to problems

Equipment and Materials
- ☐ selects and uses appropriate equipment/materials
- ☐ models safe procedures/techniques
- ☐ weighs and measures accurately
- ☐ practises proper sanitation procedures
- ☐ minimizes waste of materials
- ☐ advises of potential hazards and necessary repairs

Investigative Techniques
- ☐ gathers and applies information from a variety of sources
- ☐ explains the acid and alkaline concept, and the importance of soil pH to plant growth
- ☐ draws and labels the pH scale
- ☐ states the standard pH ranges for field soils and container media
- ☐ describes the characteristics of carbonated and disturbed soils as they relate to soil pH
- ☐ identifies chemical and physical amendments used in modifying soil pH in field and container media
- ☐ measures soil pH using a pH test kit, and makes recommendations for media improvement based on measurement results
- ☐ describes the process of cation exchange in soil
- ☐ identifies common soil salts and explains their effect on plant growth
- ☐ measures the electrical conductivity of a soil sample (correct to 0.1 unit) and interprets results relative to soil salinity and productivity
- ☐ provides recommendations for the management and reclamation of soil with salinity problems

REFLECTIONS/COMMENTS:

TASK CHECKLIST: Integrated Pest Management

AGR2130–1

A. CHEMICAL AND BIOLOGICAL CONTROL AGENTS

The student:

☐ identifies examples of major types of chemical control agents; e.g.:
  - emulsifiable concentrates
  - liquids
  - wetable powders
  - dusts
  - granules
  - fumigation materials

☐ identifies legislation and policy regarding the safe handling, storage and use of chemical control agents

☐ identifies examples of major types of biological control agents; e.g.:
  - predatory insects
  - infectious organisms
  - resistant plants

☐ identifies legislation and policy regarding the safe handling, storage and use of biological control agents

☐ reads and interprets label information for chemical and biological control agents regarding:
  - safe handling and storage
  - intended application and use

B. IMPLEMENTING AN INTEGRATED PEST MANAGEMENT PROGRAM

The student:

☐ identifies two or more pest problems within an agriculture, horticulture or forest industry

☐ performs pest sampling and monitoring procedures in order to determine:
  - the presence of each pest
  - their stage of development
  - the nature/extent of damage caused

☐ establishes threshold levels that determine when pest-control measures should be implemented for each pest

☐ identifies and applies pest management procedures for each pest that are based upon:
  - pest/host biology
  - consideration of the ecosystem

☐ explains safe techniques for the application of chemical and/or biological control agents:
  - use of equipment and supplies
  - mixing and application techniques
  - clean-up and disposal

☐ assesses the impact of pest-control practices on:
  - human and environmental health
  - the health of crops and/or livestock

REFLECTIONS/COMMENTS:

STANDARD: Achieve a minimum performance rating of 3 for the tasks identified in Section A (Chemical and Biological Control Agents) and a rating of 2 for tasks identified in Section B (Implementing an Integrated Pest Management Program).

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

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0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK CHECKLIST: Nursery/Greenhouse Crops 1 **AGR2140–1**

SOIL PREPARATION

The student:

- ☐ identifies major soil components
- ☐ selects an appropriate growing medium
- ☐ moistens growing medium as necessary
- ☐ evenly mixes growing medium given a recipe materials
- ☐ identifies and safely uses appropriate tools and equipment
- ☐

CULTIVATION

The student:

- ☐ removes weeds and other debris
- ☐ adds/mixes amendments as required
- ☐ smoothes soil for planting and/or rough digs for winter preparation
- ☐ identifies and safely uses appropriate tools and equipment
- ☐

PROPAGATION

The student:

- ☐ identifies basic germination requirements
- ☐ germinates seeds using row, broadcast or plug patterns
- ☐ performs stem cuttings of different plants (e.g., hardwood, softwood)
- ☐ performs simple leaf cuttings
- ☐ performs simple division
- ☐ identifies and safely uses appropriate tools and equipment
- ☐
- ☐

TRANSPLANTING

The student:

- ☐ identifies plant material in need of transplanting
- ☐ transplants rooted seedlings and cuttings

TRANSPLANTING
(continued)

- ☐ repots pot-bound plants to containers of appropriate size
- ☐ identifies and safely uses appropriate tools and equipment
- ☐
- ☐

WATERING AND FERTILIZING

The student:

- ☐ checks growing medium for moisture content
- ☐ applies moisture to plants as required
- ☐ identifies fertilizer components and function
- ☐ mixes and applies fertilizer as required
- ☐ identifies and safely uses appropriate tools and equipment
- ☐

CONTROL OF PESTS AND DISEASE

- ☐ recognizes common plant pests/diseases and their symptoms:
  - ☐ aphid
  - ☐ fungus gnat
  - ☐ mealy bug
  - ☐ spider mite
  - ☐ scales
  - ☐ damping-off
  - ☐ botrytis
- ☐ performs preventive measures for common plant pests and diseases
- ☐ performs eradication procedures for common plant pests and diseases
- ☐ uses nontoxic and safe materials
- ☐ identifies and safely uses appropriate tools and equipment
- ☐
- ☐
- ☐

STANDARD IS 2 IN EACH APPLICABLE AREA OF PLANT PRODUCTION AND 3 IN THE SAFE USE OF EQUIPMENT AND SUPPLIES

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

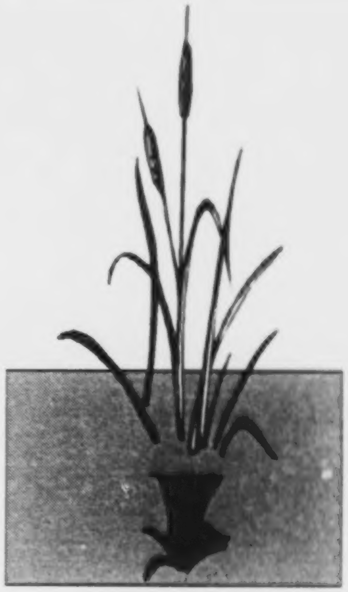
3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

REFLECTIONS/COMMENTS



ISSUE ANALYSIS: Alternatives and Consequences AGR3010–1

TASK	Observation/Rating
Preparation and Planning	4 3 2 1 0 N/A
Analyzing Perspectives	4 3 2 1 0 N/A
Collaboration and Teamwork	4 3 2 1 0 N/A
Evaluating Choices/Making Decisions	4 3 2 1 0 N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

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1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

- ☐ accurately describes five current issues in agriculture on which people disagree, explaining specific causes of disagreement
- ☐ poses thoughtful questions regarding each of the issues
- ☐ accesses a range of relevant information sources and recognizes when additional information is required
- ☐ demonstrates resourcefulness in collecting data

Analyzing Perspectives

- ☐ categorizes different points of view regarding each of five issues in agriculture:
  e.g., cultural, ethical, economic, environmental, health-related, scientific, political
- ☐ states a position on each issue and insightful reasons for adopting that position
- ☐ states three or more opposing positions on each issue and thoughtful reasons for adopting those positions
- ☐ analyzes interrelationships among different perspectives/points of view
- ☐ recognizes underlying bias/assumptions/values in information and ideas

Collaboration and Teamwork

- ☐ shares work appropriately among group members
- ☐ respects and considers the views of others
- ☐ negotiates with sensitivity solutions to agriculture management issues

Evaluating Choices/Making Decisions

- ☐ describes in detail important and appropriate alternatives regarding each of five agriculture issues
- ☐ establishes knowledge- and value-based criteria for assessing each alternative:
  e.g., social, economic, environmental
- ☐ selects an appropriate and useful alternative for each issue by showing differences among choices
- ☐ assesses strengths/weaknesses of decisions by considering consequences and implications
- ☐ communicates thoughts/feelings/ideas clearly to justify choices/decisions made
- ☐ ______________________
- ☐ ______________________

REFLECTIONS/COMMENTS

RESEARCH PROCESS: Local and Global Issues in Agriculture AGR3010–2

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ sets clear goals and establishes steps to achieve them
- ☐ creates and adheres to detailed timelines
- ☐ uses personal initiative to formulate questions and find answers
- ☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing
- ☐ accesses a range of relevant information sources and recognizes when additional information is required
- ☐ demonstrates resourcefulness in collecting data
- ☐ interprets, organizes and combines information in creative and thoughtful ways
- ☐ records information accurately with appropriate supporting detail and using correct technical terms
- ☐ recognizes underlying bias/assumptions/values in information sources
- ☐ assesses and refines approach to the task and project status based on feedback and reflection

Content
- ☐ provides a clear statement of a social, economic or environmental issue in agriculture relevant within the Alberta and/or Canada context
- ☐ compares and contrasts the Alberta/Canada issue to a similar issue at the global level

Content (continued)
- ☐ cites statements made by scientists, key stakeholder groups and the media regarding the issue
- ☐ suggests different approaches for dealing with the issue at local, national and global levels
- ☐ provides an analysis of costs and benefits associated with different approaches for dealing with the issue
- ☐ ____________________
- ☐ ____________________

Collaboration and Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates with sensitivity solutions to problems
- ☐ displays effective communication and leadership skills.

Information Sharing
- ☐ demonstrates effective use of a variety of communication media: *e.g., written, oral, audio-visual*
- ☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
- ☐ maintains acceptable grammatical and technical standards
- ☐ gives evidence of adequate information gathering by citing seven or more relevant information sources

REFLECTIONS/COMMENTS:

POSITION PAPER: Issues in Agriculture AGR3010–3

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/Reporting	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and describes steps to achieve them
☐ uses personal initiative to formulate questions and find answers
☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately using appropriate technical terms and supporting detail
☐ plans and uses time effectively, prioritizing tasks on a consistent basis
☐ assesses and refines approach to task and project status based on feedback and reflection

Content

☐ provides a clear and concise statement of the issue
☐ examines social, political, scientific, ethical, economic and/or environmental perspectives related to the issue
☐ provides detailed examples of the consequences of previous human activities relevant to the issue
☐ establishes a logical argument and conclusion regarding the issue, and provides a rationale for the position taken
☐ develops a plan of action for dealing with the issue at local and global levels

Content (continued)

☐ provides a glossary of terms relevant to the issue
☐ ______________________________
____
☐ ______________________________
____

Presenting/Reporting

☐ demonstrates effective use of a variety of communication media:
e.g., *Written:* *spelling, punctuation, grammar, format (formal/informal, technical/literary)*
Oral: *voice projection, body language, appearance, enthusiasm, evidence of prior practice*
Audio-visual: *techniques, tools, clarity, speed and pacing*
☐ maintains acceptable grammatical and technical standards through proofreading and editing
☐ provides an introduction that describes the purpose and scope of the project
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ states a conclusion by analyzing and synthesizing the information gathered
☐ gives evidence of adequate research through a reference list including seven or more relevant information sources

REFLECTIONS/COMMENTS:

RESEARCH PROCESS: Opportunities in Field Crop Production AGR3030–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and uses correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ provides a summary of production and consumption patterns within Alberta, Canada and the global community
☐ explains the impact of economic, environmental and social factors on practices within a specific production industry; e.g.:
  - international trade/global competition
  - rural and urban populations
  - consumer preferences
  - environmental stewardship/sustainable production

Content (continued)

☐ identifies market factors that influence enterprise selection; e.g.:
  - market size, location and access
  - market trends and competition

☐ identifies financial opportunities related to a specific production enterprise; e.g.:
  - fixed and variable costs
  - forecast of returns
  - risk factors/income stabilization

☐ establishes land requirements, and the suitability of soil, water and climatic conditions to production activities
☐ identifies other needs relative to production activities; e.g.:
  - structures and equipment
  - labour and transportation

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ suggests solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ provides evidence of adequate information gathering by citing relevant and current information sources

REFLECTIONS/COMMENTS

BEST COPY AVAILABLE

ASSESSMENT CRITERIA: Components of a Plant Breeding Strategy AGR3030–2

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Scheduling Tasks:** ☐ sets goals and establishes steps to achieve them ☐ accesses a range of relevant in-school/community resources ☐ poses important questions regarding strategies used to maintain/improve quality and productivity of a field crop species ☐ plans and uses time effectively ☐ ______________________________
4 3 2 1 0	**Identifying Major Components of the Breeding Strategy** ☐ interprets, organizes and combines information into a logical sequence ☐ explains principles of heredity as they relate to plants that are grown; e.g.: – dominant/recessive and desirable/undesirable traits – selection criteria and procedures ☐ explains applications of hybridization and/or other systems of breeding used within the industry ☐ describes procedures used to maintain plant quality; e.g.: – standards for grading – record keeping systems ☐ explains current and emerging applications of reproductive technology within the industry; e.g.: – propagation techniques – genetic engineering ☐ ____
4 3 2 1 0	**Presenting and Assessing the Strategy** ☐ presents major components of the breeding strategy in a logical sequence using a variety of communication media ☐ assesses the general success of the breeding strategy ☐ makes summative statements regarding opportunities and challenges relevant to maintaining/improving crop quality and productivity within the industry ☐ ____

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

TASK CHECKLIST: Field Crops 2 — AGR3030–3

PRODUCTION TASK *The student:*	Soil Preparation	Seeding/ Propagation	Crop Cultivation	Irrigation	Fertilizing	Pest/Weed/Disease Control	Harvesting
A. performs routine checks on condition of crop plants/growth medium to determine crop production requirements	☐	☐	☐	☐	☐	☐	☐
B. selects, assembles and calibrates/adjusts appropriate equipment and/or materials as necessary to perform the production task	☐	☐	☐	☐	☐	☐	☐
C. performs the production task by following established procedures and using equipment/materials in an efficient manner	☐	☐	☐	☐	☐	☐	☐
D. follows established guidelines for the safe use of hand and power equipment in performing crop production tasks*	☐	☐	☐	☐	☐	☐	☐
E. disassembles, cleans and/or stores equipment and/or materials used in the course of performing the production task	☐	☐	☐	☐	☐	☐	☐
F. performs routine safety checks on hand and power equipment, and cleans/sharpens/ lubricates/adjusts as required	☐	☐	☐	☐	☐	☐	☐
G. demonstrates effective conservation practices and regard for the environment throughout crop production cycle	☐	☐	☐	☐	☐	☐	☐

STANDARD IS 2 FOR TASKS A, B, C, E, F AND G IN TWO AREAS OF CROP PRODUCTION ADDITIONAL TO THOSE STUDIED IN AGR203

*** STANDARD IS 3 FOR TASK D (SAFE USE OF HAND AND POWER EQUIPMENT)**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

RESEARCH PROCESS: Trends in Animal Production AGR3040–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and uses correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ provides a summary of animal production and consumption patterns within Alberta, Canada and the global community
☐ explains the impact of economic, environmental and social factors on practices within a specific animal production industry; e.g.:
  - international trade/global competition
  - rural and urban populations
  - consumer preferences
  - environmental stewardship/sustainable production

Content (continued)

☐ identifies market factors that influence enterprise selection; e.g.:
  - market size, location and access
  - market trends and competition
☐ identifies financial opportunities related to a specific production enterprise; e.g.:
  - fixed and variable costs
  - forecast of returns
  - risk factors/income stabilization
☐ establishes land requirements, and the suitability of soil, water and climatic conditions to production activities
☐ identifies other needs relative to production activities; e.g.:
  - structures and equipment
  - labour and transportation

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ suggests solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ provides evidence of adequate information gathering by citing relevant and current information sources

ASSESSMENT CRITERIA: Components of an Animal Breeding Strategy AGR3040–2

RATING	ASSESSMENT CRITERIA
4 3 2 1 0	*The student:* **Scheduling Tasks** ☐ sets goals and establishes steps to achieve them ☐ accesses a range of relevant in-school/community resources ☐ poses important questions regarding strategies used to maintain/improve quality of a livestock, poultry or specialty animal ☐ plans and uses time effectively ☐ ______________________________
4 3 2 1 0	**Identifying Major Components of the Breeding Strategy** ☐ interprets, organizes and combines information into a logical sequence ☐ explains principles of heredity as they relate to the animals being raised; e.g.: – dominant/recessive and desirable/undesirable traits – selection criteria and procedures ☐ explains applications of inbreeding, linebreeding and crossbreeding within the industry ☐ explains the reproductive process and related terminology; e.g.: – estrus cycle – natural service/artificial insemination – gestation period – birthing process ☐ describes systems used to maintain animal quality within the industry; e.g.: – pedigrees and performance information – showing/judging systems and standards – registry and record systems ☐ explains current and emerging applications of reproductive technology within the industry; e.g.: – embryo transfer – gender selection ☐ ______________________________
4 3 2 1 0	**Presenting and Assessing the Strategy** ☐ presents major components of the breeding strategy in a logical sequence using a variety of communication media ☐ assesses the general success of the breeding strategy ☐ makes summative statements regarding opportunities and challenges relevant to maintaining/improving animal quality within the industry ☐ ______________________________

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

FEEDING

The student:
- ☐ monitors animals and pens for adequate water supply/consumption and ensures animals are properly watered
- ☐ selects correct ration and quantity of food for animal
- ☐ explains rules of thumb for quantities/volumes consumed daily or weekly
- ☐ feeds at correct times
- ☐ operates required feeding equipment
- ☐ performs routine health checks during feeding
- ☐ performs routine inspection/cleaning/maintenance of feed boxes and troughs during feeding

HANDLING AND RESTRAINT

The student:
- ☐ demonstrates effective animal handling technique (e.g., body stance/movement, appropriate use of force, control of noise)
- ☐ uses animal handling aids in a proper and safe manner (e.g., prods, whips, canes)
- ☐ uses animal handling facilities in a proper and safe manner (e.g., chutes, pens, gates)
- ☐ uses animal restraint equipment in a proper and safe manner (e.g., cattle squeeze, hog crate, head gate)
- ☐ demonstrates ability to handle animals in groups and/or in large areas (e.g., herding, droving, moving)

HOUSING

The student:
- ☐ monitors physical environment, ensuring appropriate light, temperature, air circulation and space variables
- ☐ provides appropriate fencing and shelter to ensure animal safety
- ☐ cleans and disinfects trailers, pens and other animal holding structures
- ☐ ensures animal comfort through supply of bedding material

CARE FOR YOUNG

The student:
- ☐ demonstrates appropriate technique to catch/hold baby animals
- ☐ cleans newborn animals
- ☐ assists newborn animals to nurse

HEALTH AND WELFARE

The student:
- ☐ identifies basic symptoms of ill health/disorders in:
  - respiration
  - movement
  - eating habits
  - physical appearance (e.g., stomach, coat, eyes, ears)
  - sounds
  - manure and urine analysis
- ☐ identifies symptoms and treatments for common pests, diseases and ailments that affect the health of animals within the industry
- ☐ administers basic treatments for common pests, diseases and/or ailments (e.g., injections, dusting)

BREEDING OPERATIONS

The student:
- ☐ explains reproductive processes characteristic of the animal:
  - estrus cycle
  - gestation period
  - natural service/artificial insemination
  - normal birth process
  - age criteria for breeding
- ☐ identifies stages/signs of estrus
- ☐ demonstrates appropriate care and handling of animals during the breeding season
- ☐ explains/applies appropriate reproductive technologies (e.g., artificial insemination, embryo transfer, estrus manipulation, gender selection)

STANDARD IS 2 FOR THE ANIMAL CARE TASKS LISTED IN EACH AREA OF ANIMAL PRODUCTION

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

Assessment Criteria and Conditions:

- given a specific agrifood industry, identify and describe:
  - the roles of federal, provincial and local government agencies responsible for product quality, worker safety and environmental impact within the industry
  - examples of government policy and/or legislation that regulate practices within the industry

Suggested Reference(s):

- *Agriscience and Technology*

STANDARD: Respond to a minimum standard of 3 on the rating scale

Rating Scale

4 meets project/task objectives in a self-directed manner. Provided explanations and critical judgements based on a superior knowledge base. Demonstrates an understanding of relevant concepts and related issues.

3 meets project/task objectives in a self-directed manner. Provides explanations and comparisons of relevant concepts using precise terminology. Requires little or no prompting.

2 meets project/task objectives with limited assistance in planning and in selecting and using resources. Applies knowledge of concepts in different situations using correct terminology. Requires occasional prompting.

1 completes task as directed, demonstrating basic skills/completeness by following a guided course of action. Uses simple recall to demonstrate basic knowledge of concepts. Requires prompting.

0 does not complete task, or is unable to provide a suitable response.

N/A Not applicable

Background Information

See *Agriscience and Technology*, Chapter 9: Processing Agricultural Products:

- Control Systems
- Quality Control
- Processing
- Preserving
- Packaging
- Storage.

Contact local agrifood industries and government agencies for current information and resources. See the Learning Resource Guide (Section I) for a listing of industry and government contacts.

Sample Questions/Activities

1. **Explain the role of government legislation in maintaining product quality and safety within an agrifood industry;** e.g.:
   - inspection of raw materials
   - product grading, labelling and packaging
   - sanitation standards
   - worker safety
   - environmental impact.
2. **Research the mandates of specific government agencies in maintaining product quality and worker safety;** e.g.:
   - Agriculture Canada
   - Alberta Agriculture, Food and Rural Development
   - Consumer and Corporate Affairs
   - Health and Welfare Canada.
3. **Research potential applications of the International Standards Organization (ISO) in regulating industry practices.**
4. **Research the mandates of specific government agencies regarding environmental safety and industry use of land, water and air;** e.g.:
   - Alberta Environmental Protection
   - Environment Canada.

PRESENTATIONS/REPORTS: Management Practices in Agrifoods AGR3050–2

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/Reporting	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and describes steps to achieve them

☐ uses personal initiative to formulate questions and find answers

☐ accesses a range of relevant information sources and recognizes when additional information is required

☐ interprets, organizes and combines information in creative and thoughtful ways

☐ records information accurately using appropriate technical terms and supporting detail

☐ plans and uses time effectively, prioritizing tasks on a consistent basis

☐ assesses and refines approach to task and project status based on feedback and reflection

Content

☐ provides a brief introduction that explains the application of basic economic principles within an agrifood industry; e.g.:
- supply and demand
- diminishing return
- comparative advantage

☐ identifies relevant supply management systems and their impact on industry practices

☐ explains management practices adopted by the agrifood industry to comply with government policy/legislation concerning product quality and safety; e.g.:
- inspection of raw materials
- product grading
- packaging and labelling
- sanitation and safety standards

Content (continued)

☐ explains specific management practices adopted by the agrifood industry to comply with government policy/legislation concerning responsible use of the environment; e.g.:
- effluent disposal
- soil conservation practices
- water treatment after use
- use of biodegradable materials

☐ ______________________________________
____

☐ provides a glossary of terms relevant to management practices within the agrifood industry

Presenting/Reporting

☐ demonstrates effective use of a variety of communication media:

e.g., Written: *spelling, punctuation, grammar, format (formal/informal, technical/literary)*

Oral: *voice projection, body language, appearance, enthusiasm, evidence of prior practice*

Audio-visual: *techniques, tools, clarity, speed and pacing*

☐ maintains acceptable grammatical and technical standards through proofreading and editing

☐ provides an introduction that describes the purpose and scope of the project

☐ states a conclusion by analyzing and synthesizing the information gathered

☐ gives evidence of adequate research through a reference list including seven or more relevant information sources

RESEARCH PROCESS: Industry Trends in Agrifoods AGR3050–3

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and using correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ describes current impacts of economic, environmental and societal trends on industry practices; e.g.:
  - international trade/global competition
  - trade liberalization
  - sustainable development
  - rural/urban demographics
  - food safety/consumer confidence
  - consumer preferences

Content (continued)

☐ outlines opportunities for product research and development within the industry; e.g.:
  - altering existing products
  - developing new products
  - developing new markets

☐ ______________________________
____

☐ ______________________________
____

☐ makes summative statements regarding industry trends and opportunities within Alberta, Canada and the global community, based on current challenges, needs and issues

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ negotiates with sensitivity solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ gives evidence of adequate information gathering by citing seven or more relevant information sources

TASK CHECKLIST: Landscape/Turf Management 2 **AGR3060–1**

MAINTENANCE TASK	Watering and Fertilizing (measurement, application)	Cultivation and Mulching of Plants	Mowing, Trimming and Edging of Turfgrass	Pruning of Plants (fruit trees, hedges, specialty plants)	Turfgrass Management (analysis of problems, corrective measures)	Spring/Winter Preparation (clean-up, repair, dethatching, aeration)	Installation of Plant Material (planting, transplanting, turf establishment, staking, guying)
The student:							
A. performs routine checks on plants/ growth medium to determine the need for service	☐	☐	☐	☐	☐	☐	☐
B. selects, assembles and calibrates appropriate equipment and/or materials as necessary to perform the maintenance service	☐	☐	☐	☐	☐	☐	☐
C. performs the maintenance service by safely following established procedures	☐	☐	☐	☐	☐	☐	☐
D. follows established guidelines for the safe use of hand and/or power equipment relevant to the service*	☐	☐	☐	☐	☐	☐	☐
E. disassembles, cleans and/or stores equipment and/or materials used in the course of performing the service	☐	☐	☐	☐	☐	☐	☐
F. performs routine safety checks on hand and power equipment, and cleans/ sharpens/lubricates as required	☐	☐	☐	☐	☐	☐	☐
G. demonstrates effective conservation practices and regard for the environment in providing the service	☐	☐	☐	☐	☐	☐	☐

STANDARD IS 2 FOR TASKS A, B, C, E, F AND G IN EACH APPLICABLE AREA OF LANDSCAPE/TURFGRASS SERVICE

*** STANDARD IS 3 FOR TASK D (SAFE USE OF HAND AND/OR POWER EQUIPMENT)**

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

PROPOSAL: Installation of Specialty Items/Systems AGR3060–2

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Scheduling Tasks** ☐ defines the task ☐ provides an explanation of need for the landscape item/system ☐ sets goals and establishes steps to achieve them ☐ plans and uses time effectively ☐ ________________
4 3 2 1 0	**Gathering Information** ☐ poses important questions regarding the landscape item/system ☐ accesses a range of relevant industry/community resources ☐ interprets, organizes and combines information into a logical sequence ☐ provides a clear description of component parts and their function ☐ establishes an estimate of total material costs ☐ ________________
4 3 2 1 0	**Planning for Installation** ☐ considers client/customer preferences and needs in planning installation ☐ addresses local regulations in planning installation procedures ☐ develops a flowchart depicting installation steps and procedures ☐ establishes an estimate of total labour costs ☐ summarizes opportunities and challenges relevant to installation ☐ ________________
4 3 2 1 0	**Presenting the Proposal** ☐ presents the proposal in a logical sequence using two or more communication media: – explanation of need/goals – description of component parts – plan for installation – estimated total cost ☐ uses correct grammatical convention and technical terms ☐ makes summative statements regarding opportunities/challenges, and general feasibility of the landscape proposal ☐ ________________

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

RESEARCH PROCESS: Selection Criteria for Stables and Physical Facilities AGR3070–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and uses correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ describes the use of stables and other confinement structures; e.g.:
  – fences and shelters
  – totally confined rearing structures
☐ identifies criteria relevant to the selection and/or design of structures and equipment; e.g.:
  – function, operation and maintenance
  – safety and efficiency
  – ethical, legal and environmental factors
  – economics and cost

Content (continued)

☐ identifies specific factors to consider in selecting:
  – a stall
  – type of flooring
  – interior ancillary facilities
☐ describes selection criteria relevant to watering and feeding systems
☐ describes approved waste management systems
☐ describes factors to consider in selecting an appropriate type of fencing
☐ identifies policy, legislation and safe practices relevant to the use of physical structures and equipment
☐ ______________________________
____
☐ ______________________________
____

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ suggests solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
  e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ provides evidence of adequate information gathering by citing relevant and current information sources

TASK CHECKLIST: Equine 2 — AGR3070-2

STALL CLEANING, BEDDING, TURNOUT AND SHELTER

The student:

☐ describes the characteristics of a healthful environment for horses (e.g., sanitation, housing, pest control, exercise)
☐ monitors physical environment, ensuring appropriate light, temperature, air circulation and space variables
☐ provides appropriate fencing and shelter to ensure safety of equine
☐ identifies agents and sources of stress for a horse, and their effects on general health (e.g., physical signs, vital signs, behaviour)
☐ describes veterinary services that are available, and the protocol for accessing these services
☐ demonstrates appropriate procedures for cleaning and disinfecting stalls
☐ demonstrates appropriate procedures for bedding a horse through supply of suitable bedding material
☐ demonstrates appropriate procedures for turnout and shelter
☐ plans and implements a daily equine exercise program
☐ ______________________________
____
☐ ______________________________
____

HORSEMANSHIP TECHNIQUES

The student:

☐ demonstrates active and passive use of the hands in riding (e.g., acting, yielding, holding, following)
☐ demonstrates active and passive use of the seat in riding (e.g., at the walk, at the trot, at the lope)
☐ demonstrates active and passive use of the legs in riding (e.g., acting, yielding, following leg)
☐ demonstrates appropriate use of artificial aids in reinforcing natural aids (e.g., riding crop, spurs)
☐ displays stability and balance while riding by maintaining an independent seat
☐ explains the use of psychology in achieving personal riding goals (e.g., focusing, imagery, self-talk)
☐ demonstrates appropriate use of selected bits in communicating with a horse (e.g., snaffle bits, curb bits)
☐ explains applications of various bitting devices in the training of horses (e.g., draw reins, German martingale, running martingale, standing martingale, cavesson)
☐ ______________________________
____
☐ ______________________________
____

STANDARD

ACIEVE A MINIMUM PERFORMANCE RATING OF 2 IN EACH AREA OF TASK ASSESSMENT

REFLECTIONS/COMMENTS

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonable consistent. Works cooperatively to achieve team goals. Identifies and provides client/ customer services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonably consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

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TASK CHECKLIST: Floral Design 2 AGR3080-1

CONDITIONING FRESH CUT FLOWERS AND GREENERY
(PERFORMANCE STANDARD IS 3 IN EACH TASK AREA)

The student:

- ☐ unpacks incoming stock and inspects for disorders/irregularities
- ☐ prepares containers for incoming stock
- ☐ mixes preservatives
- ☐ uses correct water temperature to condition materials
- ☐ cuts stems under water
- ☐ cuts stems to correct length
- ☐ stores materials at correct temperature
- ☐ incorporates recutting of stems and replacement of solutions as part of regular work routine
- ☐ handles and cleans emergency spills, and maintains facilities in a sanitary condition
- ☐
- ☐

HANDLING DRIED AND FABRIC FLOWERS AND GREENERY
(PERFORMANCE STANDARD IS 3 IN EACH TASK AREA)

The student:

- ☐ bundles materials correctly
- ☐ hangs/boxes materials in a manner that prevents breaking, soiling and fading
- ☐ organizes materials in an effective manner
- ☐

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS
(PERFORMANCE STANDARD IS 3 IN EACH TASK AREA)

The student:

- ☐ packages materials to protect, stabilize and preserve during transport
- ☐ packages materials without causing damage to floral stock
- ☐ packages materials to withstand adverse weather conditions

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS (continued)

- ☐ includes care tags, preservatives, etc., in packaging
- ☐ keeps packaging neat and clean in appearance
- ☐ performs tasks in order of priority
- ☐
- ☐

USING CONSTRUCTION MATERIALS
(PERFORMANCE STANDARD IS 3 IN EACH TASK AREA)

The student:

- ☐ ties floral bows using ribbons of different width
- ☐ wraps wires of different gauge using floral tape
- ☐

CONSTRUCTING FLORAL ARRANGEMENTS
(PERFORMANCE STANDARD IS 3 IN EACH TASK AREA)

The student:

☐ identifies different types of European arrangements:
  - presentation-style bouquet
  - cluster arrangement
  - vegetative arrangement
  - parallel arrangement
  - horgarth curve

☐ identifies different types of Oriental arrangements:
  - Ikebana
  - Moribana
  - Ritka

☐ identifies different types of arrangements used for weddings, calendar events and other special occasions:
  - nosegay
  - cascade
  - crescent
  - wreath
  - garland

☐ follows and implements a plan for constructing a European arrangement that incorporates a hogarth curve

☐ follows and implements a plan for constructing an Oriental arrangement

☐ follows and implements a plan for constructing a bridal design (e.g., nosegay, cascade)

CONSTRUCTING FLORAL ARRANGEMENTS
(continued)

☐ follows and implements a plan for constructing a second bridal design (e.g., crescent, garland)

☐ follows and implements a plan for constructing an arrangement for a calendar event (e.g., Xmas, Easter)

☐ follows and implements a plan for constructing an arrangement for an other special occasion (e.g., hospital, birthday)

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

STANDARD IS 3 AS INDICATED IN EACH APPLICABLE TASK AREA

REFLECTIONS/COMMENTS

PRODUCT ASSESSMENT: Floral Design 2 **AGR3080–2**

PROJECT STANDARDS	PROJECT: **European Arrangement** (hogarth curve)	PROJECT: **Oriental Arrangement**	PROJECT: **Bridal Design** (e.g., nosegay, cascade)	PROJECT: **Bridal Design** (e.g., crescent, garland)	PROJECT: **Calendar Event Arrangement** (e.g., Xmas, Easter)	PROJECT: **Other Special Occasion Arrangement** (e.g., hospital, birthday)	PROJECT:
Application of Design Principles							
• colour harmony is appropriate	☐	☐	☐	☐	☐	☐	☐
• composition and arrangement are correct	☐	☐	☐	☐	☐	☐	☐
• balance and symmetry are achieved	☐	☐	☐	☐	☐	☐	☐
• proportion and scale are evident	☐	☐	☐	☐	☐	☐	☐
• rhythm and harmony are achieved	☐	☐	☐	☐	☐	☐	☐
• depth and/or line are evident	☐	☐	☐	☐	☐	☐	☐
• texture and/or focal emphasis are evident	☐	☐	☐	☐	☐	☐	☐
Quality of Workmanship							
• materials used were appropriate and consistent with design concept	☐	☐	☐	☐	☐	☐	☐
• secure in construction and finished on all sides	☐	☐	☐	☐	☐	☐	☐
• construction is concealed	☐	☐	☐	☐	☐	☐	☐
• all floral materials placed at proper height, depth and/or angle	☐	☐	☐	☐	☐	☐	☐
• wrapping is smooth, snug and tight	☐	☐	☐	☐	☐	☐	☐
• performs check on final product for quality, quantity and/or appeal	☐	☐	☐	☐	☐	☐	☐
PROJECT RATING							

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

REFLECTIONS/COMMENTS

TASK CHECKLIST: Promotional Displays **AGR3080-3**

THEME OF PROMOTIONAL DISPLAY: ______________________________

Observation/ Rating	ASSESSMENT CRITERIA FOR PROMOTIONAL DISPLAY
4 3 2 1 0	**Power to Attract Attention** ☐ theme is apparent ☐ appropriate background/location is used ☐ colour, lighting and props enhance theme and product/service ☐ idea is original, unique and interesting ☐ ______________________________
4 3 2 1 0	**Arrangement** ☐ proper amounts of product are used ☐ all elements are in proportion ☐ use of line and design principles leads eye to focal point ☐ specific arrangement of goods is evident ☐ display is in balance (formal or informal) ☐ ______________________________
4 3 2 1 0	**Promotional Power** ☐ display creates interest and desire for the product/service ☐ customer can find and concentrate on most important item(s) being sold ☐ related products/services are presented ☐ all parts of the display create unity ☐ ______________________________
4 3 2 1 0	**Technical Excellence and Cleanliness** ☐ supplies are used effectively to display product/service ☐ all props (forms and fixtures) are clean and in good repair ☐ base/background is clean and neat ☐ signage is professional looking ☐ ______________________________

STANDARD IS 2
IN EACH APPLICABLE TASK

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality, particularly details and finishes, and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.
N/A	Not applicable

REFLECTIONS/COMMENTS

RESEARCH PROCESS: Specialized Applications of Marketing AGR3090–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and uses correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ identifies social, economic and environmental factors that influence market trends for an agriculture commodity
☐ provides a rationale for "supply management" within the industry
☐ explains specific marketing structures, agencies and/or policies that regulate commodity supply and exchange; e.g.:
  - marketing boards and cooperatives
  - quota systems and monopolies

Content (continued)

☐ explains the influence of specific government policies and legislation on marketing activities
☐ compares approaches used to market the commodity in Canada with other nations; e.g.:
  - United States
  - nations of the Pacific Rim
  - Europe
☐ makes forecasts regarding future exchange and marketing of the commodity
☐ ____________________
____
☐ ____________________
____

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ suggests solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ provides evidence of adequate information gathering by citing relevant and current information sources

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ASSESSMENT CRITERIA: Venture Plans AGR3090-2

RATING	ASSESSMENT CRITERIA
4 3 2 1 0	*The student:* **Scheduling Tasks** ☐ defines the task ☐ identifies task components and organizes them into a logical sequence ☐ uses time effectively ☐ ________________
4 3 2 1 0	**Developing a Venture Plan** ☐ accesses basic in-school/community information sources regarding the product/service and potential customers/markets ☐ describes the product/service, customer and target market ☐ analyzes six or more factors that affect decisions to produce and market the commodity; e.g.: – commodity supply, quality and/or pricing – existing sources of competition – time constraints on perishable products – international and/or domestic trade rules – income support programs and subsidies ☐ establishes a viable marketing alternative for the product/service; e.g.: – extensive (open) – selective (niche) ☐ establishes a pricing, packaging/labelling, advertising, promotion and distribution strategy consistent with venture goals and consumer preferences ☐ identifies intended venture outcomes and/or product/service sales ☐ summarizes opportunities and challenges relevant to the venture plan ☐ ________________
4 3 2 1 0	**Assessing and Communicating the Venture Plan** ☐ presents the venture plan in a logical sequence using one or more communication media ☐ uses correct grammar and technical terms ☐ predicts the likelihood of suggested outcomes/sales being realized ☐ make summative statements regarding strengths/weaknesses and general feasibility of the venture plan ☐ ________________

STANDARD IS 2 IN EACH APPLICABLE TASK

Rating Scale

4	exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.
3	meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.
2	meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.
1	meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.
0	has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.
N/A	Not applicable

REFLECTIONS/COMMENTS

RESEARCH PROCESS: Developments in Biotechnology AGR3100–1

TASK	Observation/Rating
Preparation and Planning	4 3 2 1 0 N/A
Information Gathering and Processing	4 3 2 1 0 N/A
Content	4 3 2 1 0 N/A
Collaboration and Teamwork	4 3 2 1 0 N/A
Information Sharing	4 3 2 1 0 N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning
- ☐ sets clear goals and establishes steps to achieve them
- ☐ creates and adheres to detailed timelines
- ☐ uses personal initiative to formulate questions and find answers
- ☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing
- ☐ accesses a range of relevant information sources and recognizes when additional information is required
- ☐ demonstrates resourcefulness in collecting data
- ☐ interprets, organizes and combines information in creative and thoughtful ways
- ☐ records information accurately with appropriate supporting detail and uses correct technical terms
- ☐ recognizes underlying bias/assumptions/values in information sources
- ☐ assesses and refines approach to the task and project status based on feedback and reflection

Content
- ☐ identifies a specific problem in agriculture and food production recently addressed through biotechnology; e.g.:
  - production costs
  - product quality
  - market supply
  - environmental impact
- ☐ identifies key stakeholder groups affected by the problem
- ☐ describes funding and partnerships established to address the problem

Content (continued)
- ☐ explains applications of biotechnology in dealing with the problem:
  - principles of genetic engineering
  - scientific design
  - experimental outcomes
- ☐ assesses the social, economic and environmental consequences of technology applications
- ☐ makes recommendations regarding the current and future use of the technology; e.g.:
  - management actions
  - further research
- ☐ ______________________________
  ____
- ☐ ______________________________
  ____

Collaboration and Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ suggests solutions to problems
- ☐ displays effective communication and leadership skills.

Information Sharing
- ☐ demonstrates effective use of a variety of communication media:
  e.g., written, oral, audio-visual
- ☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
- ☐ maintains acceptable grammatical and technical standards
- ☐ provides evidence of adequate information gathering by citing relevant and current information sources

POSITION PAPER: Managing the Water Resource AGR3110–1

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/Reporting	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

- ☐ sets goals and describes steps to achieve them
- ☐ uses personal initiative to formulate questions and find answers
- ☐ accesses a range of relevant information sources and recognizes when additional information is required
- ☐ interprets, organizes and combines information in creative and thoughtful ways
- ☐ records information accurately using appropriate technical terms and supporting detail
- ☐ plans and uses time effectively, prioritizing tasks on a consistent basis
- ☐ assesses and refines approach to task and project status based on feedback and reflection

Content

- ☐ provides a clear and concise statement of an issue regarding the impact of one or more agriculture practices on the water resource
- ☐ describes social, political, scientific, ethical, economic and environmental perspectives related to the issue
- ☐ develops a logical argument and conclusions regarding a position taken on the issue, and provides a rationale for the position taken
- ☐ develops a responsible plan of action for dealing with the issue at local and global levels
- ☐ provides a glossary of terms relevant to the issue

Content (continued)

- ☐ ______________________________
  ____
  ____
  ____

Presenting/Reporting

- ☐ demonstrates effective use of a variety of communication media:
  e.g., Written: *spelling, punctuation, grammar, format (formal/informal, technical/literary)*
  Oral: voice projection, body language, appearance, enthusiasm, evidence of prior practice
  Audio-visual: techniques, tools, clarity, speed and pacing
- ☐ maintains acceptable grammatical and technical standards through proofreading and editing
- ☐ provides an introduction that describes the purpose and scope of the project
- ☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
- ☐ states a conclusion by analyzing and synthesizing the information gathered
- ☐ gives evidence of adequate research through a reference list including seven or more relevant information sources

REFLECTIONS/COMMENTS

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LAB INVESTIGATIONS: Water Quality — AGR3110–2

TASK	Observation/Rating
Management	4 3 2 1 0 N/A
Teamwork	4 3 2 1 0 N/A
Equipment and Materials	4 3 2 1 0 N/A
Investigative Techniques	4 3 2 1 0 N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Management
- ☐ prepares self for task
- ☐ organizes and works in an orderly manner
- ☐ interprets and carries out instructions accurately
- ☐ plans and uses time effectively in a logical sequence
- ☐ displays leadership in adhering to routine procedures
- ☐ attempts to solve problems prior to requesting help

Teamwork
- ☐ cooperates with group members
- ☐ shares work appropriately among group members
- ☐ negotiates with sensitivity solutions to problems
- ☐ displays effective communication skills

Equipment and Materials
- ☐ independently selects and uses equipment/ materials
- ☐ demonstrates concern for safe procedures/techniques
- ☐ measures accurately and efficiently
- ☐ practises proper sanitation procedures
- ☐ minimizes waste of materials
- ☐ anticipates potential hazards and emergency response

Investigative Techniques
- ☐ conducts investigations of physical properties of water important to plants and/or animals; e.g.:
  - turbidity
  - temperature
  - odour/taste
- ☐ conducts investigations of chemical properties of water important to plants and/or animals; e.g.:
  - dissolved oxygen
  - pH
  - mineral content
- ☐ conducts investigations of biological properties of water important to plants and/or animals; e.g.:
  - bacteria
  - viruses
  - algae and plankton
- ☐ interprets water test results and makes recommendations regarding the suitability of the sample for a specific use in agriculture
- ☐ recommends water treatments prior to use in agriculture based on the results of water tests
- ☐ performs one or more water treatments designed to enhance water quality/suitability for use in agriculture

REFLECTIONS/COMMENTS

ASSESSMENT CRITERIA: A Water Management Plan

AGR3110–3

RATING	ASSESSMENT CRITERIA
	The student:
4 3 2 1 0	**Scheduling Tasks** ☐ sets goals and establishes steps to achieve them ☐ accesses a range of relevant in-school/community resources ☐ poses important questions regarding water management strategies for an agriculture venture ☐ plans and uses time effectively ☐ ________________
4 3 2 1 0	**Developing a Water Management Plan** ☐ interprets, organizes and combines information into a logical sequence ☐ identifies available surface and ground water supplies ☐ determines water requirements for the venture according to estimates of consumption ☐ describes suitable techniques for managing limited and/or excess water supplies in the venture; e.g.: – irrigation, storage, recycling – diversion, drainage, flood control ☐ identifies treatments for enhancing water quality both before and after use in agriculture ☐ identifies agriculture practices effective in maintaining a sustainable production system; e.g.: – cropping rotations – management of animal wastes – conservation tillage – fertilizer and pesticide management ☐ ________________
4 3 2 1 0	**Presenting and Assessing the Plan** ☐ presents major components of the water management plan in a logical sequence using a variety of communication media ☐ assesses the general feasibility of the water management plan ☐ makes summative statements regarding opportunities and challenges relevant to maintaining/improving water supply and quality for the venture ☐ ________________

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

RESEARCH PROCESS: Environmental Impacts of Agriculture AGR3130–1

TASK	Observation/Rating
Preparation and Planning	4 3 2 1 0 N/A
Information Gathering and Processing	4 3 2 1 0 N/A
Content	4 3 2 1 0 N/A
Collaboration and Teamwork	4 3 2 1 0 N/A
Information Sharing	4 3 2 1 0 N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and using correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ explains major activities conducted within two or more agriculture systems; e.g.:
  - field crop production
  - greenhouse production
  - feedlot production
  - range grazing

☐ describes the impacts of specific land use practices within each system on ecosystems; e.g.:
  - land clearing
  - cultivation practices

Content (continued)

☐ describes the impacts of specific water management practices within each system on the environment; e.g.:
  - water diversion
  - irrigation practices

☐ describes potential impacts of pesticide/fertilizer use within each system on soil, water and air characteristics
☐ describes potential impacts of selective breeding/genetic engineering within each system on the biodiversity of plant/animal populations
☐ identifies other environmental pollutants resulting from large-scale and/or specialized production practices within each system, and their impact on land, water, air and wildlife

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ negotiates with sensitivity solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ gives evidence of adequate information gathering by citing seven or more relevant information sources

REFLECTIONS/COMMENTS

ASSESSMENT CRITERIA: Venture Plan for Sustainable Production   AGR3130–2

TASK	Observation/Rating					
Preparation and Planning	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Presenting/Reporting	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets goals and describes steps to achieve them
☐ uses personal initiative to formulate questions and find answers
☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately using appropriate technical terms and supporting detail
☐ plans and uses time effectively, prioritizing tasks on a consistent basis
☐ assesses and refines approach to task and project status based on feedback and reflection

Content

☐ provides a brief introduction that explains economic and environmental goals relevant to a production venture
☐ outlines plans for multiple land use within the venture
☐ outlines plans for ensuring sustainable use of the environment; e.g.:
  – strategies for soil fertility and conservation
  – water management practices
☐ develops strategies to manage interrelationships and dependencies among domestic and non-domestic plant and animal species; e.g.:
  – retention of grasslands
  – maintenance of wetlands

Content (continued)

☐ identifies relevant government policies and regulations that support sustainable production practices within the venture; e.g.:
  – environmental constraints
  – inspection and regulation
☐ ______________________________
____
☐ provides a glossary of terms relevant to sustainable production practices

Presenting/Reporting

☐ demonstrates effective use of a variety of communication media:
e.g., Written: spelling, punctuation, grammar, format (formal/informal, technical/literary)
Oral: voice projection, body language, appearance, enthusiasm, evidence of prior practice
Audio-visual: techniques, tools, clarity, speed and pacing
☐ maintains acceptable grammatical and technical standards through proofreading and editing
☐ provides an introduction that describes the purpose and scope of the project
☐ states a conclusion by analyzing and synthesizing the information gathered
☐ gives evidence of adequate research through a reference list including seven or more relevant information sources

REFLECTIONS/COMMENTS

SELECTION CRITERIA: Nursery and Greenhouse Crops AGR3140-1

RATING	SELECTION CRITERIA
	The student:
4 3 2 1 0	**Environmental Factors** ☐ identifies climatic factors essential for successful crop production; e.g.: – length of growing season (growing days, frost-free days) – air and soil temperatures – relative humidity – wind ☐ identifies other environmental factors necessary for successful crop production; e.g.: – land and space requirements – soil and water characteristics ☐ assesses general feasibility of crop production based on environmental factors ☐ ________________________________
4 3 2 1 0	**Technology and Labour Requirements** ☐ identifies equipment needs at different stages of production ☐ identifies structures that may be required throughout the production cycle ☐ identifies labour and transportation needs relevant to the production enterprise ☐ assesses general feasibility of crop production based on technology and labour requirements ☐ ________________________________
4 3 2 1 0	**Market and Financial Opportunities** ☐ predicts market demands and trends for the nursery or greenhouse commodity ☐ identifies the size and location of potential markets ☐ identifies sources of market competition and a potential marketing strategy ☐ makes forecasts of financial opportunities related to crop production; e.g.: – fixed and variable costs – anticipated returns – risk factors ☐ assesses general feasibility of crop production based on market and financial opportunities ☐ ________________________________

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

RESEARCH PROCESS: Heredity Principles and Reproductive Technology AGR3140–2

TASK	OBSERVATIONS/RATING					
Preparation and Planning	4	3	2	1	0	N/A
Information Gathering and Processing	4	3	2	1	0	N/A
Content	4	3	2	1	0	N/A
Collaboration and Teamwork	4	3	2	1	0	N/A
Information Sharing	4	3	2	1	0	N/A

STANDARD IS 3 IN EACH APPLICABLE TASK

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

TASK CHECKLIST

The student:

Preparation and Planning

☐ sets clear goals and establishes steps to achieve them
☐ creates and adheres to detailed timelines
☐ uses personal initiative to formulate questions and find answers
☐ plans and uses time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

☐ accesses a range of relevant information sources and recognizes when additional information is required
☐ demonstrates resourcefulness in collecting data
☐ interprets, organizes and combines information in creative and thoughtful ways
☐ records information accurately with appropriate supporting detail and uses correct technical terms
☐ recognizes underlying bias/assumptions/values in information sources
☐ assesses and refines approach to the task and project status based on feedback and reflection

Content

☐ identifies desirable and undesirable plant traits relevant to one nursery/greenhouse crop variety
☐ describes selection criteria and procedures relative to one nursery/greenhouse crop variety

Content (continued)

☐ explains applications of hybridization in the propagation of one nursery/greenhouse crop variety
☐ provides a summary of procedures used by industry to maintain/improve the quality of a specific nursery/greenhouse crop variety
☐ ____________________
____
☐ ____________________
____

Collaboration and Teamwork

☐ cooperates with group members
☐ shares work appropriately among group members
☐ suggests solutions to problems
☐ displays effective communication and leadership skills

Information Sharing

☐ demonstrates effective use of a variety of communication media:
e.g., written, oral, audio-visual
☐ communicates thoughts/feelings/ideas clearly to justify or challenge a position
☐ maintains acceptable grammatical and technical standards
☐ provides evidence of adequate information gathering by citing relevant and current information sources

REFLECTIONS/COMMENTS

TASK CHECKLIST: Nursery/Greenhouse Crops 2 AGR3140–3

SOIL PREPARATION

The student:

☐ identifies major soil components

☐ selects an appropriate growing medium

☐ moistens growing medium as necessary

☐ evenly mixes growing medium given a recipe materials

☐ identifies and safely uses appropriate tools and equipment

☐

CULTIVATION

The student:

☐ removes weeds and other debris

☐ adds/mixes amendments as required

☐ smoothes soil for planting and/or rough digs for winter preparation

☐ identifies and safely uses appropriate tools and equipment

☐

PROPAGATION/TRANSPLANTING

The student:

☐ identifies basic germination requirements

☐ germinates seeds using row, broadcast or plug patterns

☐ performs stem cuttings of different plants (e.g., hardwood, softwood)

☐ performs leaf section cuttings

☐ performs air layering

☐ performs simple division

☐ performs pinching/pruning where appropriate

☐ identifies plant material in need of transplanting

☐ transplants rooted seedlings and cuttings

☐ repots pot-bound plants to containers of appropriate size

☐ identifies and safely uses appropriate tools and equipment

☐

☐

WATERING/FERTILIZING

The student:

☐ checks growing medium for moisture content

☐ applies moisture to plants as required

☐ identifies fertilizer components and function

☐ perform fertilizer calculations given a concentration formula (e.g., 200 parts per million of 9-45-15)

☐ mixes and applies fertilizer according to instructions provided

☐ identifies and safely uses appropriate tools and equipment

☐

CONTROL OF PESTS/DISEASE

The student:

☐ recognizes common plant pests/diseases and their symptoms:
  - ☐ aphid
  - ☐ fungus gnat
  - ☐ mealy bug
  - ☐ spider mite
  - ☐ scales
  - ☐ damping-off
  - ☐ botrytis

TASK CHECKLIST: Nursery/Greenhouse Crops 2 (continued) **AGR3140-3**

CONTROL OF PESTS/DISEASE

The student:

☐ performs preventive measures for common plant pests and diseases

☐ performs eradication procedures for common plant pests and diseases:
  - ☐ uses pesticide sprayers
  - ☐ uses sticky traps

☐ recognizes and applies appropriate biological pest control measures

☐ uses nontoxic and safe materials

☐ identifies and safely uses appropriate tools and equipment

☐

USE OF GROWING SPACE

The student:

☐ explains relationships among plant quality, profitability and spacing

☐ identifies factors that determine plant spacing; e.g.:
  - ☐ plant size
  - ☐ container shape
  - ☐ available space
  - ☐ air movement
  - ☐ humidity/light conditions

☐ follows appropriate practices for spacing and rotating plants

CONSERVATION PRACTICES

The student:

☐ composts waste plant and/or soil material

☐ recycles soil and/or soilless mix

☐ uses timers for lighting

☐ performs mulching to conserve water

☐ considers weather conditions (e.g., wind, temperature, precipitation) when establishing schedules for cultivation

☐

PACKAGING PLANT MATERIAL

The student:

☐ selects appropriate packaging based on:
  - ☐ weather conditions
  - ☐ size of plant
  - ☐ container style

☐ assembles and prepares packaging materials

☐ packages plant material as required

☐

☐

STANDARD IS 2 EACH APPLICABLE AREA OF PLANT PRODUCTION AND 3 IN THE SAFE USE OF EQUIPMENT AND SUPPLIES

Rating Scale

4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. Quality and productivity are consistent and exceed standards. Leads others to contribute to team goals. Analyzes and provides effective client/customer services beyond expectations.

3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. Quality and productivity are consistent. Works cooperatively and contributes ideas and suggestions that enhance team effort. Analyzes and provides effective client/customer services.

2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. Quality and productivity are reasonably consistent. Works cooperatively to achieve team goals. Identifies and provides customer/client services.

1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. Quality and productivity are reasonable consistent. Works cooperatively. Provides a limited range of customer/client services.

0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

N/A Not applicable

REFLECTIONS/COMMENTS

AGRICULTURE

SECTION H: LINKAGES/TRANSITIONS

This section of the Guide has been designed to provide an overview of linkages and transitions of CTS modules with a number of organizations. The charts and information presented in this section will assist CTS students and teachers in understanding the potential application of CTS modules as students move into the workplace.

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LINKAGES/TRANSITIONS

LINKAGES

With Other CTS Strands

The Agriculture strand provides opportunities for students to develop competencies in one or more sectors of the agriculture industry, including:

- plant and/or animal production
- agrifoods
- agribusiness
- landscape and turf management
- animal husbandry and health care
- floristry
- marketing
- environmental management.

Each industry sector (and area of course emphasis) links with competencies that are developed in other CTS strands. To facilitate and strengthen these linkages, courses may be designed by combining Agriculture modules with modules from other CTS strands (e.g., Construction Technologies, Design Studies, Fabrication Studies, Foods, Forestry, Mechanics, Wildlife).

Linkages of particular relevance to the design of CTS courses in Agriculture include:

Strand	Themes and/or Modules
Career Transitions	**Project modules** provide opportunities for learning beyond the expectations of given Agriculture modules. **Practicum modules** enable students to work toward obtaining credentials recognized in the work-place/community. **Safety modules** provide opportunities to address safety skills relevant to specific sectors of an agriculture or horticulture industry.
Community Health	Modules within the "Injury Prevention" theme link with a range of workplace competencies developed within the Agriculture strand.
Construction Technologies	Modules within the "Building Systems" theme have a range of applications in the design/construction of structures used within the agriculture and horticulture industry.
Design Studies	Design principles and processes have a range of applications in the design/ assembly of floral arrangements and marketing displays.
Fabrication Studies	Modules within the "Fabrication Processes" theme can be contextualized within specific agriculture production and service operations (e.g., welding of structures and equipment).
Mechanics	Modules within the "Propulsion Systems" and "Guidance and Control Systems" themes can be contextualized within specific agriculture/horticulture production and service operations (e.g., maintenance of power driven machines).

It is important to note that the project, practicum and safety modules in Career Transitions may be combined with Agriculture modules to provide opportunities for students to:

- acquire safety competencies and credentials
- complete a plant/animal production venture or landscape service
- enhance specific production, processing or marketing skills
- expand upon a topic in a module or theme.

Additional information regarding connections with other CTS strands is provided in this section (see "Connections with Other CTS Strands").

Sample courses in Agriculture that include modules from other CTS strands are also provided in this section (see "Agriculture in Junior High" and "Agriculture in Senior High").

With Other Secondary Programs

The Agriculture strand has many links with other core and complementary subject areas across the curriculum. For example, many of the modules in Agriculture link with the junior and senior high science programs, and provide opportunities for students to extend and apply related knowledge and skills in practical ways.

Core and complementary course linkages of particular relevance to CTS courses in Agriculture include:

Course/ Program Area	Linkage/Connection
Language Arts	Application of the research process; development of reporting and oral/ multimedia presentation skills within a range of agriculture/ horticulture contexts.
Mathematics	Application of measurement (e.g., length, area volume), ratio, fractions and percent within a range of industry contexts (e.g., ration formulation, application of fertilizer/ pesticides, costing of services).
Science	Use of observation and experimentation; knowledge and theory of relevant topics in biology, chemistry, physics and earth science; analysis of relationships among science, technology, society and the environment.
Social Studies	Knowledge of the impact of social, economic and environmental perspectives on agriculture; issue analysis, negotiation, debate, and environmental citizenship within a range of industry contexts.
CALM	Awareness of career opportunities and trends; career research and preparation.

Additional information regarding connections between Agriculture modules and other core and complementary subject areas is provided in this section (see "Agriculture: Connections Across the Curriculum").

With Practical Arts Courses

Modules in the Agriculture strand replace existing content in the Junior High Agriculture: Land and Life, and Horticulture 12, 22 and 32 programs. A detailed correlation of the Agriculture strand to these practical arts courses can be found in this section (see "Agriculture: Correlations with Practical Arts Courses: Agriculture: Land and Life 7, 8 and 9 and "Agriculture: Correlations with Practical Arts Courses: Horticulture 12, 22 and 32").

TRANSITIONS

To the Workplace

Intermediate and advanced modules are designed to develop knowledge, skills and attitudes that provide transitions to occupations in Alberta's agriculture industries. Some career sectors welcome individuals who have basic skills and are prepared to learn through further training from the employer.

Information from the National Occupational Classification (NOC) regarding occupations in agriculture-related areas that can be accessed upon completion of high school is provided in this section (see "Agriculture: Related Occupations").

To Related Post-secondary Programs

Advanced level modules will assist students to make plans regarding further studies in agriculture at post-secondary levels. The Agriculture modules provide desirable background and skills for entry into related programs at public and private colleges, technical institutes, universities and vocational collages in Alberta.

A summary of agriculture- and horticulture-related programs currently offered at post-secondary institutions in Alberta is provided in this section (see "Agriculture: Summary of Related Post-Secondary Programs").

A number of articulation agreements have been established with post-secondary institutions in Alberta. These agreements provide preferred entrance and/or advanced standing/credit for CTS students who have successfully completed designated modules. A current summary of articulation agreements in place that involve CTS modules is available through Alberta Education's web site at <http://ednet.edc.gov.ab.ca>. For further information regarding particular articulation agreements, contact the post-secondary institution and/or review its respective calendar.

CTS courses in Agriculture may also link with one or more of Alberta's Apprenticeship Training Programs (e.g., Landscape Gardener, Agriculture Mechanic). Students who are employed as an apprentice in one of these trade areas and have successfully completed designated CTS modules may qualify, upon the recommendation of their employer, for a portion of the in-school training component. A summary of articulation agreements established for specific apprenticeship trades (including a correlation to CTS modules) is available through Alberta Education's web site. Further information regarding apprenticeship linkages can be obtained by contacting Alberta Advanced Education and Career Development, Apprenticeship and Industry Training Division.

CREDENTIALLING

Students may earn partial or complete credentials recognized in the workplace and/or post-secondary institutions by demonstrating specified competencies within the CTS curriculum. The Agriculture strand, in conjunction with modules from the Career Transitions strand, provides opportunities for students to develop competencies that link with a number of credentialling programs.

Of particular significance are credentials available through:

- First Aid certificate courses
- the Alberta Green Certificate Farm Training Program
- Flowers Canada Accreditation programs
- Pesticide Applicator/Dispenser certificate courses.

Teachers may wish to explore opportunities for linking courses in Agriculture with these and/or other credentialling programs. A partial list of credentialling opportunities relevant to CTS courses in Agriculture is provided in this section (see "Credentialling Opportunities in Agriculture").

Further information regarding these and other credentialling opportunities available to CTS students is provided in the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (see Appendix 14: Credentialling Opportunities in CTS), and also on Alberta Education's web site at <http://ednet.edc.gov.ab.ca>.

LINKAGES – *Agriculture: Connections with Other CTS Strands*

Agriculture Modules	Career Transitions	Communication Technology	Community Health	Construction Technology	Cosmetology Studies	Design Studies	Electro-Technologies	Energy and Mines	Enterprise and Innovation	Fabrication Studies	Fashion Studies	Financial Management	Foods	Forestry	Information Processing	Legal Studies	Logistics	Management and Marketing	Mechanics	Tourism Studies	Wildlife
Theme: Social and Cultural Perspectives																					
AGR1010: Agriculture: The Big Picture	▤												▤		▤						
AGR2020: Animal Husbandry/Welfare	▤			▤		▤			▤	▤					▤	▤					
AGR3010: Issues in Agriculture	▤							▤					▤		▤					▤	▤
Theme: Technology and Applications																					
AGR1030: Production Basics	▤								▤			▤	▤	▤							
AGR1060: Consumer Products & Services	▤								▤			▤	▤								
AGR1070: Basic Landscape/Turf Care	▤		▤	■		▤			▤	▤		■						▤	■		
AGR1080: Basic Floral Design	▤					■			▤			■						▤			
AGR1090: Market Fundamentals	▤								▤			▤			▤			■			
AGR1100: Agriculture Technology	▤	▤		▤		▤	▤			■									■		
AGR2030: Field Crops 1	▤		■	■			▤		▤	■		■		■				▤	■		
AGR2040: Livestock/Poultry 1	▤		■	■			▤		▤	■		■						▤	■		
AGR2050: Agrifoods 1	▤								▤			▤	■					▤			
AGR2060: Landscape/Turf Management 1	▤		▤	■		▤			▤	▤		■						▤	■		
AGR2070: Equine 1	▤		▤	▤			▤		▤	▤		▤						▤			
AGR2080: Floral Design 1	▤					■			▤			■						▤			
AGR2090: Marketing 1	▤								▤			▤			▤			■			
AGR2100: Protected Structures	▤			▤			▤		▤	▤				▤							
AGR2140: Nursery/Greenhouse Crops 1	▤		■	■			▤		▤	■		■		■				▤	■		
AGR3030: Field Crops 2	▤		■	■			▤		▤	■		■		■				▤	■		
AGR3040: Livestock/Poultry 2	▤		■	■			▤		▤	■		■						▤	■		
AGR3050: Agrifoods 2	▤								▤			▤	■					▤			
AGR3060: Landscape/Turf Management 2	▤		▤	■		▤			▤	▤		■						▤	■		
AGR3070: Equine 2	▤		▤	▤			▤		▤	▤		▤						▤			
AGR3080: Floral Design 2	▤					■			▤			■						▤			
AGR3090: Marketing 2	▤								▤			▤			▤			■			
AGR3100: Biotechnology	▤								▤				▤	▤							
AGR3140: Nursery/Greenhouse Crops 2	▤		■	■			▤		▤	■		■		■				▤	■		
Theme: Management and Conservation																					
AGR1110: Resource Management	▤							■						▤	▤	▤				■	■
AGR2120: Soils Management 1	▤							▤						■							▤
AGR213: Integrated Pest Management	▤		▤						▤					▤							▤
AGR3110: Water Management	▤							▤						▤		▤					▤
AGR3120: Soils Management 2	▤							▤						■							▤
AGR3130: Sustainable Agriculture Systems	▤							■						▤	▤	▤				■	■

Provides many direct links with competencies in this strand. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical situations. ■

Provides some links with competencies developed in this strand, usually through the application of related technologies and/or processes. ▤

LINKAGES – *Agriculture in Junior High*

Course Emphasis	Agriculture Modules	Foods Modules	Mechanics Modules	Wildlife Modules
Environmental Management (3 modules)	Agriculture: The Big Picture *AGR1010* Resource Management *AGR1110*			Taking Responsibility *WLD1050*
Landscape/Turf Care (4 modules)	Agriculture: The Big Picture *AGR1010* Basic Landscape/ Turf Care *AGR1070* Agriculture Technology *AGR1100*		Engine Fundamentals *MEC1040*	
Agrifoods (5 modules)	Agriculture: The Big Picture *AGR1010* Consumer Products & Services *AGR1060* Agriculture Technology *AGR1100*	Food Basics *FOD1010* Canadian Heritage Foods *FOD1060*		
Field Crop Production (6 modules)	Agriculture: The Big Picture *AGR1010* Production Basics *AGR1030* Market Fundamentals *AGR1090* Agriculture Technology *AGR1100*		Engine Fundamentals *MEC1040* Mechanical Systems *MEC1130*	

LINKAGES – ***Agriculture in Senior High***

Course Emphasis	Agriculture Modules	Enterprise & Innovation Modules	Design Studies Modules	Career Transitions Modules
Introductory Horticulture (5 credits) Prerequisite: None	Production Basics *AGR1030* Basic Landscape/ Turf Care *AGR1070* Nursery/Greenhouse Crops 1 *AGR2140*	Challenge & Opportunity *ENT1010*		Project 1A *CTR1110*
Intermediate Horticulture (5 credits) Prerequisite: Introductory Horticulture	Nursery/Greenhouse Crops 1 *AGR2140* Landscape/Turf Management 1 *AGR2060* Soils Management 1 *AGR2120*	Planning a Venture *ENT1020*		Project 2A *CTR2110*
Advanced Horticulture (5 credits) Prerequisites: Intermediate Horticulture	Protected Structures *AGR2100* Landscape/Turf Management 2 *AGR3060* Soils Management 2 *AGR3120*	Implementing the Venture *ENT2040*		Project 3A *CTR3110*
Beginning Floral Design and Plantscape (3 credits) Prerequisite: None	Basic Floral Design *AGR1080*		3D Design Fundamentals *DES1040*	Project 2A *CTR2110*
Advanced Floral Design and Plantscape (4 credits) Prerequisite: Beginning Floristry and Plantscape	Floral Design 1 *AGR2080* Floral Design 2 *AGR3080*		3D Design Studio 1 *DES3040*	Project 3A *CTR3110*

LINKAGES – *Agriculture: Connections Across the Curriculum*

Agriculture Modules	Across the Curriculum: Junior High							Senior High											
	Language Arts	Social Studies	Mathematics	Science	Health & PLS	Physical Education	Fine Arts	English	Social Studies	Mathematics	Science (General)	Biology	Chemistry	Physics	CALM	Physical Education	Fine Arts	Social Sciences	Second Language
Theme: Social and Cultural Perspectives																			
AGR1010: Agriculture: The Big Picture	▤	▤						▤	▤						▤				
AGR2020: Animal Husbandry/Welfare	▤	▤		▤				▤	▤			▤	▤						
AGR3010: Issues in Agriculture	▤	■		▤				▤	■		■							▤	
Theme: Technology and Applications																			
AGR1030: Production Basics			▤	■						▤			▤						
AGR1060: Consumer Products & Services				■															
AGR1070: Basic Landscape/Turf Care			▤	■							▤	■	▤		▤				
AGR1080: Basic Floral Design			▤	▤			▤				▤	▤			▤		▤		
AGR1090: Market Fundamentals	▤	▤							▤										
AGR1100: Agriculture Technology		▤	▤	■						▤		▤	▤						
AGR2030: Field Crops 1			▤	■							▤	■	▤		▤				
AGR2040: Livestock/Poultry 1			▤	■							▤	■	▤		▤				
AGR2050: Agrifoods 1			▤	■							▤	■	▤		▤				
AGR2060: Landscape/Turf Management 1			▤	■							▤	■	▤		▤				
AGR2070: Equine 1			▤	■							▤	■			▤				
AGR2080: Floral Design 1											▤	▤	▤		▤		▤		
AGR2090: Marketing 1		▤	▤						▤						▤				
AGR2100: Protected Structures			▤	■						▤	▤	▤	▤						
AGR2140: Nursery/Greenhouse Crops 1			▤	■							▤	■	▤		▤				
AGR3030: Field Crops 2			▤	■							▤	■	▤		▤				
AGR3040: Livestock/Poultry 2			▤	■							▤	■	▤		▤				
AGR3050: Agrifoods 2			▤	■							▤	■	▤		▤				
AGR3060: Landscape/Turf Management 2			▤	■							▤	■	▤		▤				
AGR3070: Equine 2			▤	■							▤	■			▤				
AGR3080: Floral Design 2											▤	▤	▤		▤		▤		
AGR3090: Marketing 2		▤	▤						▤						▤				
AGR3100: Biotechnology				■							■	■	▤	▤					
AGR3140: Nursery/Greenhouse Crops 2			▤	■							▤	■	▤		▤				
Theme: Management and Conservation																			
AGR1110: Resource Management	▤	▤		■				▤	▤		■	▤							
AGR2120: Soils Management 1				▤							▤	▤	■						
AGR2130: Integrated Pest Management			▤	■							■	■	■						
AGR3110: Water Management	▤			■				▤			▤								
AGR3120: Soils Management 2				▤							▤	▤	■						
AGR3130: Sustainable Agriculture Systems	▤	▤		■				▤	▤		■							▤	

Provides many direct links with course content. Students will reinforce, extend and apply a substantial number of knowledge and/or skill components in practical contexts.	■
Provides some links with course content, usually through the application of related technologies and/or processes.	▤

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LINKAGES – *Agriculture: Correlations with Practical Arts Courses:**
Agriculture: Land and Life, 7, 8 and 9

	Modules: CTS Agriculture										
Themes/Topics: Agriculture - Land & Life	Agriculture: The Big Picture 1010	Production Basics 1030	Consumer Products & Services 1060	Market Fundamentals 1090	Agriculture Technology 1100	Resource Management 1110	Agrifoods 1 2050	Protected Structures 2100	Soils Management 1 2120	Agrifoods 2 3050	Soils Management 2 3120
Survey: What is Agriculture?											
diversity of agriculture	x										
steps in production, processing and marketing		x	x	x							
agriculture careers	x	x	x	x							
agriculture as both producer and consumer	x										
historical trends	x										
local, national and international food production	x			x							
transportation and trade of food products			x	x							
factors that support and inhibit food production	x	x									
global issues in food production						x					
YEAR ONE											
Theme 1: Production, Processing and Marketing - Emphasis on Consumer											
consumption: consumer needs and preferences	x										
classifying products	x										
steps in processing and packaging			x								
approaches to marketing				x							
farm production		x									
transportation and storage			x	x							
career specializations	x	x	x	x							
local, provincial and national production	x			x							
Theme 2: Technology and Research - Mechanics											
tasks performed in agriculture production		x			x						
manual and mechanical approaches to production		x			x						
power sources					x						
technology as a means of problem solving					x						
efficiency of technologies		x	x		x						
safe use of technologies		x	x		x						
effectiveness of technologies		x	x		x						
drawing, designing and constructing technologies					x						
Theme 3: Resource Management - Water											
water requirements		x				x					
water resources						x					
landforms and water supply						x					
strategies for water management						x					
water rights						x					
water issues						x					
trade-offs in water uses						x					
conservation ethic	x					x					
careers in water management	x	x	x	x							

* September 1997: All practical arts courses replaced by Career and Technology Studies.

LINKAGES – *Agriculture:* *Correlation with Practical Arts Courses:**
Agriculture: Land and Life 7, 8 and 9 (continued)

Modules: CTS Agriculture

Themes/Topics: Agriculture - Land & Life	Agriculture: The Big Picture 1010	Production Basics 1030	Consumer Products & Services 1060	Market Fundamentals 1090	Agriculture Technology 1100	Resource Management 1110	Agrifoods 1 2050	Protected Structures 2100	Soils Management 1 2120	Agrifoods 2 3050	Soils Management 2 3120
YEAR TWO											
Theme 1: Production, Processing and Marketing - Emphasis on Nutrition											
nutrient composition of foods							x			x	
consumer needs and preferences	x										
identifying and classifying products	x										
processing and packaging			x								
farm production operations		x									
breed development					x						
transportation and storage			x	x							
local, national and international production	x			x							
Theme 2: Technology and Research - Planning, Monitoring and Managing											
natural, artificial and micro environments								x			
plant growth and plant health		x									
soil moisture and humidity		x									
plant propagation		x									
pest and disease management		x									
controlled growing environments								x			
optimum conditions for plant growth		x									
Theme 3: Resource Management - Soil											
soil functions and characteristics		x				x					
soil types		x				x					
soil development						x					
nutrient cycles									x		
soil degradation						x					
soil management						x					
organic and inorganic nutrients						x					
global issues in soil management						x					
careers in soil management	x	x	x	x							
YEAR THREE											
Theme 1: Production, Processing and Marketing - Emphasis on Energy											
range of food crops	x										
consumption; consumer needs and preferences	x										
identifying and classifying products	x										
processing, packaging and merchandising			x	x							
farm production operations		x									
transportation and storage			x	x							
inherent and invested energy					x						
food pyramid	x										
local, national and international production	x			x							

*September 1997: All practical arts courses replaced by Career and Technology Studies.

LINKAGES – *Agriculture:* *Correlation with Practical Arts Courses:**
Agriculture: Land and Life 7, 8 and 9 (continued)

Modules: CTS Agriculture

Themes/Topics: Agriculture - Land & Life	Agriculture: The Big Picture 1010	Production Basics 1030	Consumer Products & Services 1060	Market Fundamentals 1090	Agriculture Technology 1100	Resource Management 1110	Agrifoods 1 2050	Protected Structures 2100	Soils Management 1 2120	Agrifoods 2 3050	Soils Management 2 3120
Theme 2: Technology and Research - Biotechnology											
breeds and varieties		x			x						
genetic characteristics		x			x						
principles of animal breeding		x			x						
artificial insemination and embryo transplants		x			x						
growth supplements and food additives		x			x						
hormones		x			x						
biotechnology		x			x						
Theme 3: Resource Management - Land Use											
classifying land uses						x					
identifying land use issues	x					x					
evaluating alternative land uses						x					
historical changes in land use						x					
sustained yield and stewardship						x					
interpreting/drawing land use plans											x
setting goals in land use	x					x					
careers in land use planning	x	x	x	x							

*September 1997: All practical arts course replaced by Career and Technology Studies.

LINKAGES – *Agriculture:* ***Correlation with Practical Arts Courses:****
Agriculture: Land and Life 7, 8 and 9 (continued)

Modules: CTS Agriculture

	Animal Husbandry/Welfare	Nursery/Greenhouse Crops 1	Agrifoods 1	Landscape/Turf Management 1	Floral Design1	Marketing 1	Protected Structures	Soils Management 1	Integrated Pest Management	Issues in Agriculture	Field/Greenhouse Crops 2	Agrifoods 2	Landscape/Turf Management 2	Floral Design 2	Water Management	Soils Management 2	Sustainable Agriculture Systems	Career Transitions
Topics: Horticulture 12, 22, 32	2020	2140	2050	2060	2080	2090	2100	2120	2130	3010	3030	3050	3060	3080	3110	3120	3130	
HORTICULTURE 12																		
landscaping				x									x					
indoor plants					x									x				
soils and fertilizers				x	x			x					x	x		x		
food production		x					x				x							
botany and biology		x		x					x		x		x					
greenhouses		x					x				x							
pruning				x									x					
floral design					x									x				x
HORTICULTURE 22A																		
food and ornamental plants		x		x							x		x					
greenhouses		x					x				x							
greenhouse systems							x											
safety		x		x			x		x		x		x	x				
soils in greenhouse		x					x	x			x					x		
practical project		x		x	x		x				x		x	x				x
HORTICULTURE 22B																		
ground maintenance				x				x	x				x		x	x		x
scheduling and planning ground care activities													x					x
site preparation				x									x					x
planting trees, shrubs, lawns, annuals and perennials				x									x					x
general maintenance of landscaped areas				x				x	x				x		x	x		x
use of equipment and tools				x									x					x
landscape construction and maintenance				x				x	x				x		x	x		x
HORTICULTURE 22C																		
history of park and garden development																		x
reasons for landscaping																		x
commercial and residential design													x					x
preparation of a landscape plan													x					x
cost estimating					x								x	x				x
using annual and perennial flowers				x									x					
use of indoor plants					x									x				
design work using flowers and plants					x									x				

*September 1997: All practical arts courses replaced by Career and Technology Studies.

LINKAGES – *Agriculture: Correlations with Practical Arts Courses:**
Horticulture 12, 22 and 32

Modules: CTS Agriculture

	Animal Husbandry/Welfare	Nursery/Greenhouse Crops 1	Agrifoods 1	Landscape/Turf Management 1	Floral Design1	Marketing 1	Protected Structures	Soils Management 1	Integrated Pest Management	Issues in Agriculture	Field/Greenhouse Crops 2	Agrifoods 2	Landscape/Turf Management 2	Floral Design 2	Water Management	Soils Management 2	Sustainable Agriculture Systems	Career Transitions
Topics: Horticulture 12, 22, 32	2020	2140	2050	2060	2080	2090	2100	2120	2130	3010	3030	3050	3060	3080	3110	3120	3130	
HORTICULTURE 32A																		
nursery site selection		x									x							
identification of woody ornamentals		x		x							x		x					
propagation of woody ornamentals and greenhouse crops		x		x							x		x					
nursery development		x									x							
marketing procedures						x												
scheduling of crops		x									x							
greenhouse cost accounting																		x
practical project		x		x	x		x				x		x	x				x
HORTICULTURE 32B																		
biological aspects of horticulture		x		x					x		x		x					
horticulture crops		x	x								x	x						
ecological aspects of organic gardening		x								x	x						x	
ecological aspects of parks and other landscapes				x						x			x		x		x	
HORTICULTURE 32C																		
landscape construction																		x
pesticide application		x		x					x		x		x					
business management													x	x				x
work study		x		x	x						x		x	x				x

*September 1997: All practical arts courses replaced by Career and Technology Studies.

TRANSITIONS – *Agriculture: Related Occupations*

Information for this chart was obtained from the National Occupational Classification (NOC) descriptions.

Educational Requirements:

D:	High School Education	B:	College or Vocational Education
C:	Apprenticeship	A:	University

STRAND-RELATED OCCUPATIONS		EDUCATION REQUIREMENTS			
Occupation Profile	NOC#	D	C	B	A
Agricultural and Fish Products Inspectors	2222	✓		✓	✓
Agricultural and Related Service Contractors and Managers	8252	✓		✓	✓
Agricultural Commodity Inspector	2222	✓		✓	✓
Agricultural Engineer	2148				✓
Agricultural Engineering Technologist	2221/223			✓	✓
Agricultural Mechanic/Farm Equipment Mechanic	7312		✓		
Agricultural Products Processing Occupations	9461	✓			
Agricultural Representatives, Consultants and Specialists	2123				✓
Animal Care Attendant	6483			✓	✓
Animal Health Technologist	3213			✓	
Artificial Insemination Technologist	8252			✓	
Aquaculture and Marine Harvest Labourers	8611	✓			
Aquaculture Operators and Managers	8257	✓		✓	
Beekeeper	8251	✓		✓	
Biochemist	2112				✓
Biological Technician	2221			✓	✓
Biologist and Related Scientists	2121				✓
Botanist	2121				✓
Dairy Producer	8251			✓	
District Agriculturist	2123			✓	✓
Environmental Auditor	2263			✓	✓
Environmental Education Specialist	4169				✓
Environmental Engineer	2131/2148				✓
Farm Supervisors and Specialized Livestock Workers	8253	✓		✓	
Farm Worker	8431	✓			
Farmers and Farm Managers	8251	✓		✓	
Farrier	7383			✓	
Feed Mill Worker (Production)	9461	✓			
Florist (Floral Designer)	6421			✓	

…continued

TRANSITIONS – ***Agriculture: Related Occupations (continued)***

STRAND -RELATED OCCUPATIONS		**EDUCATION REQUIREMENTS**			
Occupation Profile	NOC#	D	C	B	A
Grain and Forage Crop Producers	8251	✓		✓	✓
Grain Elevator Manager	6234	✓		✓	
Grain Elevator Operator	6234	✓			
Greenhouse/Nursery Operator	8254/8256	✓		✓	
Harvesting Labourer	8611	✓			
Hazardous Waste Management Technician	2263			✓	
Hydrologist	2113				✓
Inspectors in Public and Environmental Health and Occupational Health & Safety	2263	✓		✓	✓
Land Surveyor	2154				✓
Landscape and Horticulture Technicians and Specialists	2225			✓	✓
Landscape Architect	2152				✓
Landscape Architectural Technologist	2225			✓	
Landscape Gardener	2225		✓		
Landscaping and Grounds Maintenance Contractors and Manager	8255			✓	
Landscaping and Grounds Maintenance Labourers	8612	✓			
Livestock Producer	8251	✓	✓	✓	✓
Manufacturing Manager	0911			✓	✓
Market Gardener	8251	✓		✓	
Other Labourers in Processing, Manufacturing and Utilities	9619	✓			
Other Professional Engineer	2148				✓
Other Professional Occupations in Physical Sciences	2115				✓
Pet Groomer and Animal Care Worker	6483		✓		
Pest Control Operator/Exterminator	7444		✓		
Pollution Control Technical	2211				✓
Primary Production Managers	0811				✓
Supervisors, Food, Beverage	6212	✓			
Supervisors, Landscape and Horticulture	8256	✓			
Testers and Graders, Food and Beverage Processing	9465	✓			
Turfgrass Management Specialist	2225			✓	
Veterinarian	3114				✓

TRANSITIONS – *Agriculture: Summary of Related Post-secondary Programs*

	PUBLIC COLLEGES										PRIVATE COLLEGES				TECH. INST.		UNIVERSITIES			VOCATIONAL COLLEGES			
	Fairview College	Grande Prairie Regional College	Grant MacEwan Community College	Lakeland College	Lethbridge Community College	Medicine Hat College	Mount Royal College	Olds College	Red Deer College	**APPRENTICESHIP TRADE**	Augustana University College	Canadian Union College	Concordia College	King's University College, The	Northern Alberta Institute of Technology	Southern Alberta Institute of Technology	University of Alberta	University of Calgary	University of Lethbridge	AVC - Calgary	AVC - Edmonton	AVC - Lac La Biche	AVC - Lesser Slave Lake
Agricultural Business/Management	CD			D	CD			D									B		CBM				
Agricultural Production/Technology	D			D	CD			D															
Agriculture (degree program with various specializations)				1t		1t	1t		1t		1t	1t	1t				BM PhD		1t				
Animal Health Technology	D			D				D							D	D							
Beekeeper Technician (Apiarist)	C																						
Equine Studies/Western and English Trainer's Assistant	C			D				CD															
Farrier Science	C							C															
Horticulture / Landscape Design / Gardening								CD		4y					D					C			
Turfgrass Management Technology	CD							D															
Pre-Veterinary Medicine		2t	1t	1t		1t 2t	1t		2t		2t	1t	B2t	2t			2t	2t	3t				

CODES:

B	Bachelor's Degree	D	Diploma (2 years)	w	weeks
M	Master's Degree	V	Varies	m	months
Ph.D.	Doctoral Degree	1t	One-year transfer	y	years
C	Certificate (1 year or less)	2t	Two-year transfer		

*Information taken from "It's About Time: To Start Thinking About Your Future," Advanced Education and Career Development, 1995.

CREDENTIALLING – *Credentialling Opportunities in Agriculture*

The following credentialling opportunities link with modules in the Agriculture strand. Further information (including current contacts) for these and other credentialling opportunities available to CTS students is available through Alberta Education's web site at <http://ednet.edc.gov.ab.ca>.

Credential/ Certificate	Training/ Credentialling Agency	Related CTS Strands/Modules	Program Description
Farmer Pesticide Certificate	Extension Services, Olds College	AGR2030: Field Crops 1 AGR3030: Field Crops 2 CTR3040–3080: Practicum Modules	An industry-based credentialling program that leads to certification by Olds College in the safe use of pesticides. Develops knowledge of poisoning and first aid, safe handling procedures, environmental safety, legislation and food safety, application and equipment calibration. The course and examination are administered by Olds College.
Flowers Canada Accreditation: • Basic Florist Skills • Floral Design Level I • Floral Design Level II • Floral Management Level I • Floral Management Level II	Flowers Canada, The Association of the Canadian Floral Industry	AGR1080: Basic Floral Design AGR2080: Floral Design 1 AGR3080: Floral Design 2 CTR3040–3080: Practicum Modules	An industry-based credentialling program that leads to certification by Flowers Canada as *Canadian Accredited Floral Designer, Canadian Accredited Floral Manager* and/or *Canadian Accredited Master Florist*. Develops introductory through advanced competencies in floral design and management. Certification requires successful completion of both a written and practical examination administered by Flowers Canada.
Green Certificate Farm Training: • Beef Production • Dairy Production • Crop Production • Irrigated Crop Production • Sheep Production • Swine Production	Alberta Agriculture, Food & Rural Development	AGR2020: Animal Husbandry/ Welfare AGR2030: Field Crops 1 AGR2040: Livestock/Poultry 1 AGR2130: Integrated Pest Management AGR3030: Field Crops 2 AGR3040: Livestock/Poultry 2 CTR3040–3080: Practicum Modules	An industry-based "apprenticeship-style" training program that develops practical competencies in livestock/crop production at technical, supervisory and managerial levels. Involves establishing a partnership between student, school, industry coach and Alberta Agriculture, Food and Rural Development. Practical competencies are assessed by Green Certificate personnel.
Pesticide Applicator Certificate: • Agriculture • Landscape • Industrial	Contact Alberta Environmental Protection for information regarding approved training/ credentialling agencies	AGR2030: Field Crops 1 AGR2060: Landscape/Turf Management 1 AGR2140: Nursery/Greenhouse Crops 1 AGR3030: Field Crops 2 AGR3060: Landscape/Turf Management 2 AGR3140: Nursery/Greenhouse Crops 2 CTR3040–3080: Practicum Modules	A provincial credentialling program administered by Alberta Environmental Protection that leads to a certificate in pesticide application. Develops knowledge and skills relevant to practical aspects of pesticide application, including weed identification, pest identification and equipment calibration. Independent study materials that align with the provincial certification examination are available.

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AGRICULTURE

SECTION I: LEARNING RESOURCE GUIDE

This section of the GSI has been designed to provide a list of resources that support student learning.

Three types of resources are identified:

- Authorized: Resources authorized by Alberta Education for CTS curriculum; these resources are categorized as basic, support, or teaching
- Other: Titles provided as a service to assist local jurisdictions to identify resources that contain potentially useful ideas for teachers. Alberta Education has done a preliminary review of these resources, but further review will be necessary prior to use in school jurisdictions
- Additional: A list of local, provincial and national sources of information available to teachers, including the community, government, industry, and professional agencies and organizations.

The information contained in this Guide, although as complete and accurate as possible as of June 1997, is time-sensitive.

For the most up-to-date information on learning resources and newer editions/versions, consult the LRDC *Buyers Guide* and/or the agencies listed in the Distributor Directory at the end of this section.

CTS is on the Internet.
Internet Address:
http://ednet.edc.gov.ab.ca

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INTRODUCTION

CTS AND THE RESOURCE-BASED CLASSROOM

Career and Technology Studies (CTS) encourages teachers to establish a resource-based classroom, where a variety of appropriate, up-to-date print and nonprint resources are available. Learning resources identified for CTS strands include print, software, video and CD-ROM formats. Also of significance and identified as appropriate throughout each strand are sources of information available through the Internet.

The resource-based classroom approach accommodates a variety of instructional strategies and teaching styles, and supports individual or small group planning. It provides students with opportunities to interact with a wide range of information sources in a variety of learning situations. Students in CTS are encouraged to take an active role in managing their own learning. Ready access to a strong resource base enables students to learn to screen and use information appropriately, to solve problems, to meet specific classroom and learning needs, and to develop competency in reading, writing, speaking, listening and viewing.

PURPOSE AND ORGANIZATION OF THIS DOCUMENT

The purpose of this document is to help teachers identify a variety of resources to meet their needs and those of the students taking the new CTS curriculum. It is hoped that this practical guide to resources will help teachers develop a useful, accessible resource centre that will encourage students to become independent, creative thinkers.

This document is organized as follows:

- Authorized Resources:
    - – basic learning resources
    - – support learning resources
    - – teaching resources
- Other Resources
- Additional Sources.
- Distributor Directory.

Some resources in the guide have been authorized for use in some or all of the CTS strands, e.g., the Career and Technology Studies video series produced by ACCESS: The Education Station. Further information is provided in relevant sections of this resource guide.

Each resource in the guide provides bibliographic information, an annotation where appropriate, and a module correlation to the CTS modules. The distributor code for each entry will facilitate ordering resources. It is recommended that teachers preview all resources before purchasing, or purchase one copy for their reference and additional copies as required.

Distributor Code	Resources		Levels/Module No.		
			1	2	3
ACC	Title	Author	1010	2010	3010
	Bibliographic Information				
	Annotation				

Distributor Code - see Distributor Directory

1 = Introductory
2 = Intermediate
3 = Advanced

Indicates module number

HOW TO ORDER

Most authorized resources are available from the Learning Resources Distributing Centre (LRDC) at:

12360 – 142 Street
Edmonton, AB T5L 4X9
Telephone: 403–427–5775 (outside of Edmonton dial 310–0000 to be connected toll free)
Fax: 403–422–9750
Internet: http://ednet.edc.gov.ab.ca/lrdc

Please check LRDC for availability of videos.

RESOURCE POLICY

Alberta Education withdraws learning and teaching resources from the provincial list of approved materials for a variety of reasons; e.g., the resource is out of print; a new edition has been published; the program has been revised. Under section 44 (2) of the *School Act*, school boards may approve materials for their schools, including resources that are withdrawn from the provincial list. **Many school boards have delegated this power to approve resources to school staff or other board employees under section 45 (1) of the *School Act*.**

For further information on resource policy and definitions, refer to the *Student Learning Resources Policy* and *Teaching Resources Policy* or contact:

Learning Resources Unit, Curriculum Standards Branch
Alberta Education
5th Floor, Devonian Building, East Tower
11160 Jasper Avenue
Edmonton, AB T5K 0L2
Telephone: 403–422–4872 (outside of Edmonton dial 310–0000 to be connected toll free)
Fax: 403–422–0576
Internet: http://ednet.edc.gov.ab.ca

Note: Owing to the frequent revisions of computer software and their specificity to particular computer systems, newer versions may not be included in this guide. However, schools may contact the LRDC directly at 403–427–5775 for assistance in purchasing computer software.

Trademark Notices: Microsoft, Access, Excel, FoxPro, Mail, MS-DOS, Office, PowerPoint, Project, Publisher, Visual Basic, Visual C++, Windows, Windows NT, Word, and Works are either registered trademarks or trademarks of Microsoft Corporation. Apple, Mac, Macintosh, and Power Macintosh are either registered trademarks or trademarks of Apple Computer, Inc. Other brand and product names are registered trademarks or trademarks of their respective holders.

AUTHORIZED RESOURCES

BASIC LEARNING RESOURCES

The following basic learning resources have been authorized by Alberta Education for use in the Agriculture curriculum. These resources address the majority of the learner expectations in one or more modules and/or levels. A curriculum correlation appears in the right-hand column.

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Agriscience: Fundamentals & Applications.* (2nd edition.) Elmer Cooper. Delmar Publishers. ITP Nelson Canada, 1996. This textbook integrates basic biological and technological concepts with principles of production agriculture. It carefully takes students through all major science areas – from plant and animal sciences, to food science, to environmental technology. This second edition features the latest information on integrated pest management, agribusiness, and natural resource management. Also available is a student lab manual and a variety of teacher support materials. Teachers please note that this resource has a very heavy U.S. emphasis.	1010 1030 1060 1090 1100 1110	2020 to 2090 2120 2130	3010 to 3080 3100 to 3130
LRDC	*Agriscience and Technology.* L. DeVere Burton. Albany, NY: Delmar Publishers Inc., 1992. This student textbook addresses the evolution of agriculture. It includes basic science, research and technological development used in agriculture. The text discusses technological advances from past to present, and research that may affect agriculture in the future. The textbook is divided into five sections, including Biotechnology, Technology: Food and Fibre, Energy and Power Technology, Computer Aided Management and Environmental Technology.	1010 1020 1030 1060 1090 1100 1110		
LRDC	*Commercial Greenhouse, The.* James W. Boodley. Albany, NY: Delmar Publishers Inc., 1981. This textbook focuses attention on the technical aspects of greenhouse facilities, the economics of the horticulture industry, growing media, environmental factors, greenhouse crops and the harvest handling and marketing of plants and flowers. The text includes information on occupations in floriculture. This is an American publication and does not provide references to Canada.		2030 2100	3030

Basic Learning Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Ecosystems.* D. Herridge and B. Chernin. Gage Educational Publishing, 1995. The 72 page student text provides an illustrated introduction to ecosystems, and a more in-depth look at living and non-living factors and the roles they play in ecosystems. The text concludes with examples of human impacts on ecosystems and examines current issues from a variety of perspectives. The 500 page teacher's resource book provides teaching ideas that correlate to the student text, and suggestions regarding evaluation, supplementary resources and integrated projects. Blackline masters reproducible for classroom use are provided.	1020 1030 1100 1110	2120 2130	3010 3020 3110 3120 3130
LRDC	*Global Environment, The.* Steven Sterling and Sue Lyle. Mississauga, ON: Copp Clark Pitman, 1991. This text addresses a broad range of environmental issues within a global context. Issues are examined through a variety of stimulating activities, including case studies, discussion and role-playing.	1110	2120	3010 3110 3120 3130
LRDC	*Home Floral Design.* Lansing, MI: The John Henry Company, 1991. This student textbook addresses basic techniques used in the florist industry. Colourful illustrations, photographs and well-illustrated step-by-step instructions make the textbook easy to use by students and teachers. Soft cover format.		2080	3080
LRDC	*Landscaping Principles and Practices.* Jack E. Ingels. Albany, NY: Delmar Publishers Inc., 1992. This student textbook provides an introductory overview of the landscaping industry. It includes basic principles of landscape design, methods of installation and maintenance, and strategies for beginning a landscaping business.		2060	3060
LRDC	*Science of Agriculture, The: A Biological Approach.* R.V. Herren. Delmar Publishers. ITP Nelson Canada, 1997. Presents an integrated science-based approach to teaching agriculture concepts. Encourages students to think critically and explore linkages between disciplines. Addresses topics in plant and animal science, agricultural entomology, food and fibre technology, genetic engineering, aquaculture and environmental science. Provides opportunities for students to investigate career opportunities in agriculture. A lab manual, instructor's guide to accompany textbook, and instructor's guide to accompany lab manual are available.	1010 1030 1060 1100 1110	2020 2030 2040 2050	3030 3040 3050 3100 3120 3130

Basic Learning Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Soils Investigations I.* Ed Toews, Bill Souster, Doug Peters. Olds, AB: Land Sciences Centre, Olds College, 1993. The student text addresses the history of soil development, soil forming factors, components of soil, classification, texture, structure, colour, pH and salinity. Each unit includes brief statements about the purpose for studying the unit, what the student should be able to do at the end of the unit, suggested activities, definition of technical terms, self-checks and answer keys.		2120	
LRDC	*Soils Investigations II.* Ed Toews, Bill Souster, Doug Peters. Olds, AB: Land Sciences Centre, Olds College, 1993. This student textbook addresses the nutrient requirements of plants, soil fertility, fertilizers, soil testing, the western grid survey system, soil capability and soil survey maps and reports. Each unit includes the purpose for studying the unit, what students should be able to do at the completion of a unit, suggested activities, definition of technical terms, self-checks and answer keys.			3120
LRDC	*Step-By-Step: A Designer's Guide to Floral Design.* The John Henry Company, 1994. Provides step-by-step instructions in the basic methods and principles of floral design. Full colour photographs and illustrations stimulate creativity and ingenuity, yet provide practical guidelines for creating functional and stable designs. Includes chapters on floral retailing, flowers and supplies, design principles and colour, basic floral design techniques, specialty design and styling techniques, and product, source and design descriptions. Also includes a fresh flower identification chart. A useful resource for both the novice and experienced designer.	1080	2080	3080

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SUPPORT LEARNING RESOURCES

The following support learning resources are authorized by Alberta Education to assist in addressing some of the learner expectations of a module or components of modules.

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Agribusiness: An Entrepreneurial Approach.* W.H. Hamilton et al. Delmar Publishers. IPT Nelson Canada, 1992. Text and Workbook. Provides knowledge and skills for developing business plans in agriculture. Addresses accounting, management (location, facilities, pricing), decision making strategies, customer development and taxes. Coverage is comprehensive, including start-up through management to sale of product. An instructor's guide to accompany textbook and instructor's guide to accompany workbook are available.	1010 1030 1090	2090	3090
LRDC	*Annuals for the Prairies.* E.W. Toop. Lone Pine Publishing, 1993. Describes more than 200 annual flowering plants, including information on how to grow, blooming periods and preferred uses. Includes colour photos and easy to understand text. Detailed cross-reference charts describing colour, height and disease susceptibility are also included in this comprehensive resource.	1030	2030	3030
AGP	*Backyard Pest Management.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, 1994. Booklet. This 83-page booklet provides basic information about the management of insects, weeds, plant diseases and vertebrate pests commonly found in the homeowner's backyard. The information is intended to help individuals select non-chemical and chemical approaches to solving pest problems. The booklet provides answers to over 150 common pest problems, discusses alternatives to pesticides and develops strategies for the safe use of pesticides.		2030 2060 2130	3030 3060
ACC	*Career and Technology Studies: Key Concepts.* Edmonton, AB: ACCESS: The Education Station. A series of videos and utilization guides relevant to all CTS strands. The series consists of: *Anatomy of a Plan; Creativity; Electronic Communication; The Ethics Jungle; Go Figure; Innovation; Making Ethical Decisions; Portfolios; Project Planning; Responsibility;* and *Technical Writing.*	all	all	all
LRDC	*Displays.* (Designer's Workbook Series.) The John Henry Company, 1993. Provides twenty well illustrated projects for working with dried materials. This "how-to" book stimulates creative design ideas and improves merchandising techniques. Each design idea is presented in full colour with complete design instructions.	1080	2080	3080

Support Learning Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Dried Designs.* (Designer's Workbook Series.) The John Henry Company, 1994. Provides display ideas and coordinated designs to recreate for nine seasons/special occasions. This "how to" book stimulates creative design ideas and improves merchandising techniques. Each display idea is presented in full colour with complete design instructions.	1080	2080	3080
GGE	*From the Ground Up.* (Revised edition.) Garry Ens., et al. Winnipeg, MB: Green and Growing Educational Projects, 1994/1996. Video. This 30-minute video focuses on issues of sustainable development in agriculture and food production. The video explores relationships between agricultural practices and the health of our society, environment and economy. The program encourages debate over food production and marketing practices, giving viewers an opportunity to consider their influence as consumers and citizens on the way food is produced. The video is supported with a teacher's guide giving lesson plans and student worksheets.		2050 2090	3010 3050 3090 3130
ACC	*If You Build It.* Winnipeg, MB: Ducks Unlimited Canada, 1991. Video (21 minutes). This Video discusses the importance of wetlands in maintaining the health of ecosystems. An overview of human factors involved in wetland restoration is provided.	1110		3010 3110 3130
ACC	*Life Cycle of Waterfowl.* Winnipeg, MB: Ducks Unlimited Canada, 1991. Video (24 minutes). This Video discusses the importance of waterfowl as a natural resource, and the habitat features that make Alberta a primary area for waterfowl production. Provides a basic understanding of the life history and ecology of waterfowl. Patterns of duck migration routes are discussed.	1110		3010 3110 3130
LRDC	*Living Soil, The: A Renewable Resource.* Sue Bland and Marilyn Lewry. Edmonton, AB: Weigl Education Publishers Limited, 1991. Provides an introduction to soil—where it comes from, what happens in soil, and why it is important. Part I explores what soil is and how it is formed. Part II examines what happens in soil. Part III looks at the role of soil in the environment and the effects of human activities on soil. Includes case studies, activities, occupational profiles and a glossary.	1110	2120	3120

Support Learning Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Mine Gardens.* (W5.) CTV/Magic Lantern Communications, 1996. Video. One thousand feet beneath Manitoba's frozen prairie, W5 reporter Susan Ormiston reports on a Saskatoon-based bio-tech company that is growing roses, basil and fruit bearing bushes in a old mine shaft. A Saskatoon berry bush grows three times faster in the mine as in a greenhouse. *Hudson Bay Mining* in Flin Flon, Manitoba, wants to find out if old mine tunnels can become growing chambers. *Prairie Plant Systems* want to grow stress-free "super" parent plants and then clone them in their lab.	1100	2100	3010 3100
LRDC	*One Minute Readings: Issues in Science, Technology and Society.* R.F. Brinckerhoff. Don Mills, ON: Addison-Wesley Publishing Company, 1992. This book contains readings and questions related to issues in science, technology and society. Applications of science are raising difficult questions and are creating some problems that cannot be answered. The book is intended to give students practice in making the kinds of decisions they will experience in life. Students need a knowledge of science to find the best possible answers. A teacher's manual is available.			3010 3020 3130
LRDC	*Organic Field Crop Handbook.* Dee Kramer, et al. Ottawa, ON: Canadian Organic Growers Inc., 1992. Handbook. The book provides an introduction to organic farming. The handbook is divided into three sections: Basic Principles of Organic Agriculture; Designing Crop Rotation; Step-by-step Guide to Field Crops. The purpose of the book is to provide information regarding sustainable agriculture practices.		2030 2090	3030 3090 3130
LRDC	*Perennials for the Prairies.* (Prairie Gardening Series.) E. Toop and S. Williams. University of Alberta. Lone Pine Publishing, 1991. Provides information regarding colour, height, suggested use and practical cultural instructions for approximately 200 perennials hardy in Alberta's climates. This reference also includes general information on propagating perennials, cultivating perennials, designing beds and borders, rooting care and hardy bulbs. A glossary of technical terms and reference chart that summarizes pertinent information about each species has also been provided.	1030 1060	2030 2060	3030 3060

Support Learning Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
ACC	*Promise in the Land: Sustaining our Agriculture*. D. Binder. University of British Columbia. Filmest Associates Distribution Ltd., 1995. Video includes Teacher's Handbook. This video (57 minutes) focuses on threats to sustaining a healthy agriculture industry, new practices which contribute to a more sustainable agriculture and the role of agriculture in enhancing the environmental, social and physical well-being of human populations. Practical and workable solutions as well as warnings and risks are presented. Concludes with a call to action for support of sustainable eco-agriculture strategies. Although based on British Columbia's agriculture industry, concepts are transferable to Alberta. Includes handbook for teachers.	1100		3010 3100 3110 3130
LRDC	*Raising Poultry Successfully*. Will Graves. Charlotte, VT: Williamson Publishing Co., 1985. The author provides practical advice on how to raise chickens, ducks and geese for meat and eggs. The book also addresses techniques for housing and care techniques for animals.		2040	3040
LRDC	*Science of Agriculture, The: A Biological Approach*. R.V. Herren. Delmar Publishers. ITP Nelson Canada, 1997. Lab Manual. See Basic Learning Resources for module correlation and annotation.			
LRDC	*Soil Science & Management*. (2nd edition.) Edward J. Plaster. Albany, NY: Delmar Publishers Inc., 1992. This resource addresses the importance of soil, soil origin and development, physical properties of soil, soil water, water conservation, irrigation and drainage, organic matter, soil fertility, soil pH and salinity, plant nutrition, soil sampling and testing, fertilizers, organic amendments, tillage and cropping systems, horticulture uses of soils, soil classification and soil conservation. This is an American publication and does not provide references to Canada.		2030 2120	3030 3120 3130
LRDC	*University of Alberta Home Gardening Course*. John Harapiak. Edmonton, AB: University of Alberta, Faculty of Extension, 1986. This textbook provides an in-depth study of home gardening. The content, tables, graphs and maps apply to Alberta. It covers sub-topics under the headings of Garden Fundamentals, Landscaping, Vegetable and Fruit Production and Controlled Environments. Appropriate to the needs of high school students.		2030 2060 2130	3030 3060

Support Learning Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Water and Agriculture*. Edmonton, AB: Alberta Environment, 1988. Resource Kit. This kit includes a Student Book, Teacher's Guide, Activity Master Sheets, Overhead Projector Masters and Masters for Posters. The resource establishes an understanding of how water affects and is affected by agricultural practices. The unit examines technological practices developed to manage water in times and places where inadequate or excessive supplies occur. Of particular relevance to junior high students.	1110		3010 3110
DUCK	*Wetland Environments*. Lloyd Pearce. Edmonton, AB: Ducks Unlimited Canada, 1991. Kit. This educational kit addresses the following topics: wetlands ecology, wetlands habitats, wetland and waterfowl, wetland conservation and wetland environmental issues. The central focus is on problem-oriented investigation involving research, experimental procedure and field experiences. The kit includes student materials, teacher notes and video resources.	1110		3010 3110 3130
LRDC	*Woody Ornamentals for the Prairies*. (Revised edition.) H. Knowles. University of Alberta. Lone Pine Publishing, 1995. Provides information on the selection of woody plants for use in landscapes. This reference includes sections on plant selection, planting and maintenance, woody plant problems and planting design. Includes an extensive section on plant descriptions that provides common and Latin names and information on form, size, habit, shape, texture, foliage, bark and fruit for more than 250 specimens. A glossary of botanical and horticultural terms has been included.	1030 1060	2030 2060 2130	3030 3060

TEACHING RESOURCES

The following teaching resources are authorized by Alberta Education to assist teachers in the instructional process.

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Agribusiness: An Entrepreneurial Approach.* W.H. Hamilton et al. Delmar Publishers. IPT Nelson Canada, 1992. See Support Learning Resources for module correlation and annotation.			
LRDC	*Ecology Studies of Lakes in Alberta.* Edmonton, AB: Alberta Environment, 1988. Resource materials include Book and Teacher's Package, 1989. This print package deals with the ecology of freshwater environments. The unit of study discusses human impact on lake environments and involves students in the methods and technology employed to study lakes. Workshops on how to use the materials are provided.	1110	2130	3010 3110 3130
LRDC	*Ecosystems.* D. Herridge and B. Chernin. Gage Educational Publishing, 1995. Teacher's Resource Book. See Basic Learning Resources for module correlation and annotation.			
GGE	*From the Ground Up.* Garry Ens, et al. Winnipeg, MB: Green and Growing Educational Projects, 1996. Teacher's Guide. See Support Learning Resources for module correlation and annotation.			
LRDC	*Issues: An Integrated Approach to Sensitive Science and Society Issues.* A. Hersovici. Mississauga, ON: Ontario Farm Animal Council (OFAC), 1992. Resource Book. This resource deals with some of the ethical, environmental, health and socio-economic issues concerning agriculture today. The resource suggests teaching strategies that encourage critical thinking, research and collaborative decision making. A number of case studies are included along with a contact list for further research.		2020	3010 3020 3130
LRDC	*One Minute Readings: Issues in Science, Technology and Society.* R.F. Brinckerhoff. Don Mills, ON: Addison-Wesley Publishing Company, 1992. Teacher's Manual. See Support Learning Resources for module correlation and annotation.			

Teaching Resources (continued)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Science of Agriculture, The: A Biological Approach.* R.V. Herren. Delmar Publishers. ITP Nelson Canada, 1997. Instructor's Guide to Accompany Textbook; Instructor's Guide to Accompany Lab Manual. See Basic Learning Resources for module correlation and annotation.			
LRDC	*Soil Science & Management.* (2nd edition.) Edward J. Plaster. Albany, NY: Delmar Publishers Inc., 1992. Instructor's Guide. This resource addresses the importance of soil, soil origin and development, physical properties of soil, soil water, water conservation, irrigation and drainage, organic matter, soil fertility, soil pH and salinity, plant nutrition, soil sampling and testing, fertilizers, organic amendments, tillage and cropping systems, horticulture uses of soils, soil classification and soil conservation. This is an American publication and does not provide references to Canada.		2030 2120	3030 3120 3130
LRDC	*Soils Investigations 1 and 2.* Ed Toews, Bill Souster and Doug Peters. Olds, AB: Land Sciences Centre, Olds College, 1993. Facilitator's Manual. This manual is intended to be used with *Soils Investigations 1 and 2* basic student resources. Includes approximately 25 pages of teaching notes and assignment answer keys, and 50 pages of sample test items. The manual also provides information about required laboratory equipment and provides a supplementary list of print and video resources.		2120	3120
LRDC	*Soils Investigations 1 and 2.* Olds, AB: Land Sciences Centre, Olds College, 1994. Materials Kit. The materials kit contains consumable and non-consumable items not usually found in a science lab that are required to conduct laboratory activities suggested in *Soils Investigation 1 and 2* (modules and assignment booklets). The kit includes a video of different soil formations and profiles, soil and fertilizer samples, soil survey maps and reports, and a Munsell Colour Chart. A materials replenishment kit for consumable items is available.		2120	3120
LRDC	*Space Age Agriculture: Land and Life.* Edmonton, AB: Alberta Agriculture, 1987. Handbook. This teacher handbook includes lesson plans, notes on teaching strategies and general information about the agriculture industry. The primary goal of all activities is to promote awareness of agriculture in Alberta, and of current production, processing and distribution systems.	1010 1020 1030 1060 1090 1100 1110		

AGRICULTURE RESOURCES

THEME CODE:
A. Social & Cultural Perspectives
B. Technology & Applications
C. Management & Conservation

FORMAT CODE:
p - Print
v - Video
s - Software

STATUS CODE:
B - Basic
S - Support
T - Teaching
O - Other

LEVEL CODE:
1 - Introductory
2 - Intermediate
3 - Advanced

JR/SR HIGH CODE:
J - Junior High
S - Senior High

LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	B	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	B	A	B	B	B	B	B	B	B	B	C	C	C
	Format	Status	Junior/Senior High	Agriculture: The Big Picture	Production Basics	Consumer Products & Services	Basic Floral Design	Market Fundamentals	Agriculture Technology	Resource Management	Animal Husbandry/Welfare	Field Crops 1	Livestock/Poultry 1	Agrifoods 1	Landscape/Turf Management 1	Equine 1	Floral Design 1	Marketing 1	Protected Structures	Soils Management 1	Integrated Pest Management	Nursery/Greenhouse Crops 1	Issues in Agriculture	Field Crops 2	Livestock/Poultry 2	Agrifoods 2	Landscape/Turf Management 2	Equine 2	Floral Design 2	Marketing 2	Biotechnology	Water Management	Soils Management 2	Sustainable Agriculture Systems
Module Number				1010	1030	1060	1080	1090	1100	1110	2020	2030	2040	2050	2060	2070	2080	2090	2100	2120	2130	2140	3010	3030	3040	3050	3060	3070	3080	3090	3100	3110	3120	3130
Agribusiness: An Entrepreneurial Approach				X	X			X										X												X				
Text & Workbook	*p*	S	J/S																															
Instructor's Guide	*p*	T	J/S																															
Agriscience and Technology	*p*	B	J	X	X	X		X	X	X																								
Agriscience: Fundamentals & Applications (2nd Ed.)	*p*	B	J/S																															
Annuals for the Prairies	*p*	S	J/S		X							X												X										
Backyard Pest Management in Alberta: Diseases , Insects, Weeds	*p*	S	S									X			X						X			X			X							
Commercial Greenhouse, The	*p*	B	S									X							X					X										
Displays	*p*	S	J/S				X										X												X					
Dried Designs	*p*	S	J/S				X										X												X					
Ecosystems					X				X	X										X	X		X									X	X	X
Text	*p*	B	J/S																															
Teacher's Resource Book	*p*	T	J/S																															
Ecology Studies of Lakes in Alberta	*p*	T	J/S							X											X		X									X		X
From the Ground Up														X				X					X			X				X				X
Video	*v*	S	S																															
Teacher's Guide	*p*	T	S																															
Global Environment, The	*p*	B	J							X										X			X									X	X	X
Home Floral Design	*p*	B	S														X												X					
If You Build It	*v*	S	J/S							X													X									X		X
Issues: An Integrated Approach to Sensitive Science and Society Issues	*p*	T	S								X												X											X
Landscaping Principles and Practices	*p*	B	S												X												X							
Life Cycle of Waterfowl	*v*	S	J/S							X													X									X		X
Living Soil, The: A Renewable Resource	*p*	S	J/S							X										X													X	
Mine Gardens (W5)	*v*	S	J/S						X										X				X								X			
One Minute Readings: Issues in Science, Technology and Society																							X											X
Text	*p*	S	S																															
Teacher's Manual	*p*	T	S																															
Organic Field Crop Handbook	*p*	S	S									X						X						X						X				X
Perennials for the Prairies	*p*	S	J/S		X	X						X			X									X			X							
Promise in the Land: Sustaining our Agriculture	*v*/ *p*	S	J/S							X													X								X	X		X
Raising Poultry Successfully	*p*	S	S										X												X									

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	Format	Status	Junior/Senior High	Agriculture: The Big Picture	Production Basics	Consumer Products & Services	Basic Floral Design	Market Fundamentals	Agriculture Technology	Resource Management	Animal Husbandry/Welfare	Field Crops 1	Livestock/Poultry 1	Agrifoods 1	Landscape/Turf Management 1	Equine 1	Floral Design 1	Marketing 1	Protected Structures	Soils Management 1	Integrated Pest Management	Nursery/Greenhouse Crops 1	Issues in Agriculture	Field Crops 2	Livestock/Poultry 2	Agrifoods 2	Landscape/Turf Management 2	Equine 2	Floral Design 2	Marketing 2	Biotechnology	Water Management	Soils Management 2	Sustainable Agriculture Systems
LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	B	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	B	A	B	B	B	B	B	B	B	B	C	C	C
Module Number				1010	1030	1060	1080	1090	1100	1110	2020	2030	2040	2050	2060	2070	2080	2090	2100	2120	2130	2140	3010	3030	3040	3050	3060	3070	3080	3090	3100	3110	3120	3130
Science of Agriculture, The: A Biological Approach				X	X	X			X	X	X	X	X	X										X	X	X					X		X	X
Text	p	B	J/S																															
Lab Manual	p	S	J/S																															
Instructor's Guide	p	T	J/S																															
Soils Investigations I																				X														
Materials Kit	p	B	S																															
Facilitator's Manual	p	T	S																															
Soils Investigations II																																	X	
Materials Kit	p	B	S																															
Facilitator's Manual	p	T	S																	X													X	
Soil Science and Management												X								X				X									X	X
Text	p	S	S																															
Instructor's Manual	p	T	S																															
Space Age Agriculture: Land and Life	p	T	J	X	X	X		X	X	X																								
Step-by-Step: A Designer's Guide to Floral Design	p	T	J/S				X										X												X					
University of Alberta Home Gardening Course	p	S	S									X			X						X			X			X							
Water and Agriculture	p	S	J/S							X													X									X		
Wetland Environments	p	S	J/S							X													X									X		X
Woody Ornamentals for the Prairies	p	S	J/S		X	X						X			X									X			X							
OTHER RESOURCES																																		
Agroclimatic Atlas of Alberta	p	O	S									X			X									X			X							
Alberta Forage Manual	p	O	S									X	X											X	X									
Alberta: A Good Place For Agriculture	v	O	J	X																														
Alberta's Horticultural Guide	p	O	S									X			X									X			X							
Amazing Milk Book, The	p	O	J			X																												
Animal Welfare - It's Your Responsibility	v	O	S								X		X			X									X			X						
Bedding Plant Expert, The	p	O	S									X												X										
Bovine Madness	v	O	J	X																														
Canada's Canola	p	O	S									X												X										
Canola Production Tips	p	O	J/S		X							X									X			X										
Career Connections	p	O	J/S	X	X	X		X				X	X	X	X	X	X	X																
Careers in Agriculture	v	O	J		X	X		X																										
Caring for the Green Zone: Riparian Areas and Grazing Management	p	O	J/S							X																						X		X

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THEME				A	B	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	B	A	B	B	B	B	B	B	B	B	C	C	C
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Module Number				1010	1030	1060	1080	1090	1100	1110	2020	2030	2040	2050	2060	2070	2080	2090	2100	2120	2130	2140	3010	3030	3040	3050	3060	3070	3080	3090	3100	3110	3120	3130
Caring For the Land Teaching Kit	*p*	O	J		X					X																								
Cattle Option	*v*	O	S										X					X							X					X				
Chemicals on the Farm	*p*	O	S									X											X	X										X
Dictionary of Natural Resource Managment	*p*	O	J/S																															
Environmental Citizenship Series: Primer on Environmental Citizenship, A	*p*	O	J/S							X											X		X									X		X
Environmental Citzenship Series: Primer on Water, A	*p*	O	J/S							X													X									X		X
Farm Conservation Planning	*v*	O	S									X	X											X	X									
Farm Energy Management in Alberta	*p*	O	S									X	X											X	X									
Farm Machinery	*p*	O	S									X												X										
Farmer Buck: W5 Series	*v*	O	S															X												X				
Farming Facts 1996: Statistical Insights on Canadian Agriculture; Updated annually	*p*	O	J/S	X																			X											
Field and Shelter Belts	*p*	O	S									X												X										X
Florist Review, The	*p*	O	S														X												X					
Focus On Series	*p*	O	J/S							X											X		X									X		X
Food For Thought - Facts About Food and Farming in Canada	*p*	O	S																				X											X
Green Future: How To Make A World of Difference	*p*	O	S																				X											X
Growing More Than Food, Growing Alberta? (Windows Version)	*p*	O	J	X	X	X				X																								
Guess What's Coming to Dinner	*v*	O	S																												X			
Household Hazardous Wastes Handbook, The	*p*	O	J/S							X											X		X											X
Houseplant Expert, The	*p*	O	S														X												X					
How Green Is Your School?	*p*	O	S																				X											X
In Balance With Nature	*v*	O	S																				X											X
International Agriculture	*p*	O	S																				X											X
Land Conservation Education Program	*p*	O	J/S		X					X		X	X		X					X			X										X	X
Land Use and Abuse	*p*	O	J/S							X		X								X			X	X									X	X

AGRICULTURE RESOURCES

THEME CODE:
A. Social & Cultural Perspectives
B. Technology & Applications
C. Management & Conservation

FORMAT CODE:
p - Print
v - Video
s - Software

STATUS CODE:
B - Basic
S - Support
T - Teaching
O - Other

LEVEL CODE:
1 - Introductory
2 - Intermediate
3 - Advanced

JR/SR HIGH CODE
J - Junior High
S - Senior High

	Format	Status	Junior/Senior High	Agriculture: The Big Picture	Production Basics	Consumer Products & Services	Basic Floral Design	Market Fundamentals	Agriculture Technology	Resource Management	Animal Husbandry/Welfare	Field Crops 1	Livestock/Poultry 1	Agrifoods 1	Landscape/Turf Management 1	Equine 1	Floral Design 1	Marketing 1	Protected Structures	Soils Management 1	Integrated Pest Management	Nursery/Greenhouse Crops 1	Issues in Agriculture	Field Crops 2	Livestock/Poultry 2	Agrifoods 2	Landscape/Turf Management 2	Equine 2	Floral Design 2	Marketing 2	Biotechnology	Water Management	Soils Management 2	Sustainable Agriculture Systems
LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	B	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	B	A	B	B	B	B	B	B	B	B	C	C	C
Module Number				1010	1030	1060	1080	1090	1100	1110	2020	2030	2040	2050	2060	2070	2080	2090	2100	2120	2130	2140	3010	3030	3040	3050	3060	3070	3080	3090	3100	3110	3120	3130
Lois Hole's Bedding Perennial Favorites	*p*	O	J/S		X							X												X										
Lois Hole's Bedding Plant Favorites	*p*	O	J/S		X							X												X										
Lois Hole's Tomato Favorites	*p*	O	J/S		X							X												X										
Lois Hole's Vegetable Favorites	*p*	O	J/S		X							X												X										
Looking At Food Systems	*p*	O	J		X	X		X																										
Manual of Pest Control (5th Ed.)	*p*	O	S																X											X		X		
Matter of Soil, A	*v*	O	S									X								X				X									X	
Modern Livestock and Poultry Production	*p*	O	S										X												X									
Oh Gully - Where is the Soil?	*v*	O	S									X								X			X	X									X	X
On the Line	*v*	O	J/S			X								X												X								
Ornamental Horticulture: Principles and Applications	*p*	O	S									X			X		X				X			X			X		X					
Pest Wars	*v*	O	S									X							X					X										
Pesticide Education Program	*p*	O	S		X				X			X			X						X		X	X			X							X
Prairie Soils: The Case for Conservation	*p*	O	S									X								X				X									X	X
Primer on Fresh Water, A	*p*	O	J/S							X													X									X		X
Primer on Waste Management, A	*p*	O	S																				X											X
Recommended Code of Practice for the Care & Handling of Farm Animals	*p*	O	S								X		X												X									
Role of Fertilizers in Sustainable Agriculture and Food Production, The	*p*	O	S									X												X										X
Salt Woes	*v*	O	S									X								X				X									X	
Sense of Humus, A	*v*	O	S									X											X	X										X
Space Age Agriculture	*v*	O	J						X																									
Story of Soil and Water Conservation in Alberta, The	*p*	O	J/S							X										X												X	X	
Sun Changers, The	*v*	O	S										X												X									
The Reason Why	*v*	O	J/S	X																			X											
Urge to Till, The	*v*	O	S									X								X			X	X								X	X	X
Water In Alberta: The Living Flow	*p*	O	S																				X									X		X
Water Management in Alberta	*p*	O	S																													X		X

AGRICULTURE RESOURCES

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LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	B	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	B	A	B	B	B	B	B	B	B	B	C	C	C
Module Number				1010	1030	1060	1080	1090	1100	1110	2020	2030	2040	2050	2060	2070	2080	2090	2100	2120	2130	2140	3010	3030	3040	3050	3060	3070	3080	3090	3100	3110	3120	3130
Water Quality Questions: The Nature and Importance of Water Quality Variables in Alberta	*p*	O	J/S		X					X													X									X		X
Water Water: Making the Most of Moisture	*v*	O	S									X	X											X	X							X		
Weed Seedling Identification	*p*	O	S									X			X									X			X							

OTHER RESOURCES

These titles are provided as a service only to assist local jurisdictions to identify resources that contain potentially useful ideas for teachers. Alberta Education has done a preliminary review of the resources. However, the responsibility to evaluate these resources prior to selection rests with the user, in accordance with any existing local policy.

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
AGP	*Agroclimatic Atlas of Alberta.* Edmonton, AB: Alberta Agriculture, Print Media Branch, 1990. Booklet.		2030 2060	3030 3060
ACC	*Alberta: A Good Place For Agriculture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1989. Video.	1010		
AGE	*Alberta's Horticulture Guide.* B. Vladicka. Alberta Agriculture, Food and Rural Development, 1994. This book gives information on the basic requirements of plants and how to grow specific vegetable, fruit and ornamental crops. Charts include information on height, color, suggested planting dates, etc. Hints for home landscaping are very useful.	1010 1030 1060	2030 2050 2060	3030 3060
AGP	*Alberta Forage Manual.* Edmonton, AB: Alberta Agriculture, Print Media Branch, 1992. Manual.		2030 2040	3030 3040
DNC	*Amazing Milk Book, The.* Catherine Ross and Susan Wallace. Toronto, ON: Kids Can Press Ltd., 1991. Textbook.	1060		
AGME	*Animal Welfare – It's Your Responsibility.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1990. Video.		2020 2040 2070	3040 3070
PBI	*Bedding Plant Expert, The.* D.G. Hessayon. Britannica House, Waltham Cross, Herts, England: PBI Publications, 1992. Textbook.		2140	3140
AGME	*Bovine Madness.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1992. Video.	1010		
ACPC	*Canada's Canola.* Canola Council of Canada. Alberta Canola Producers Commission, 1995. A brochure that describes the canola industry, from origins through production, to market development research, grading and pricing.	1030 1060 1090	2030 2050 2090	3030 3050

Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
ACPC	*Canola Production Tips.* Alberta Canola Producers Commission, 1994. Provides production information for maximizing return from a canola crop. Deals with choosing a variety, planting and disease management.	1030	2030 2130	3030
AGE	*Career Connections.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Education and Community Services Branch. Poster.	1010 1030 1060 1090	2030 to 2090	
ACC	*Careers in Agriculture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1985. Video.	1030 1060 1090		
ABCC	*Caring for the Green Zone: Riparian Areas and Grazing Management.* Barry Adams and Lorne Fitch. Alberta Riparian Habitat Management Project. Alberta Cattle Commission; Alberta Agricutlture, Food & Rural Development; Alberta Environmental Protection, 1995. This soft-covered booklet of 36 pages provides an overview of riparian habitats and issues, and suggests practical strategies for successful riparian management by ranchers and others who use and value riparian areas.	1110		3110 3130
ENED	*Caring for the Land Teaching Kit* (Grades 7–9). Edmonton, AB: Alberta Environmental Protection, Education Branch, 1993. Teacher's guide and student material.	1030 1110		
ACC	*Cattle Option.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1986. Video.		2040 2090	3040 3090
ADD	*Chemicals on the Farm.* Bob McDuell. Cheltenham, England: Stanley Thornes (Publishers) Ltd, 1990. This resource addresses a variety of topics regarding the effects of chemicals on agriculture, including food chains, soil acidity, the nitrogen cycle, the manufacture of nitric acid, reactions of nitric acids, making fertilizers and water pollution. This booklet has limited print and makes extensive use of graphics.		2030	3010 3030 3130

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Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
UBCP	*Dictionary of Natural Resource Management.* J. Dunster. UBC Press, 1996. This dictionary provides an up-to-date and comprehensive source of natural resource management terms. It includes more than 6000 entries, extensively cross-referenced and illustrated to provide exact meanings. Encourages terminology from a wide range of disciplines and is based on information obtained from discussions with experts around the world. A useful resource for those involved in managing the planet's natural resources.	1110	2120	3110 3120 3130
ENCA	*Environmental Citizenship Series: A Primer on Environmental Citizenship*. Ottawa, ON: Environment Canada, 1993. Resource Book. The goal of this document is to help Canadians to make environmentally responsible decisions. The book provides short informational anecdotes, maps and charts, and questions/answers concerning people becoming environmentally conscious citizens. The book includes information on ecological processes, relationships of human societies with the environment, and key environmental issues that Canadians face today. The book is one of a series of Environmental Citizenship Primers.	1110	2130	3010 3020 3110 3130
ENCA	*Environmental Citizenship Series: A Primer on Water.* Ottawa, ON: Environment Canada, 1990. Resource Book. This primer was developed to answer a wide range of questions about water. The resource covers a range of topics, e.g., water (general), underground water, water uses, water quality, water sharing, water management, water do's and don'ts. The primer contains practical advice on what individuals can do to conserve water for the use of present and future generations.	1110		3010 3110 3130
AGME	*Farm Conservation Planning.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1991. Video.		2030 2040	3030 3040
AGP	*Farm Energy Management in Alberta.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Engineering and Rural Services Division. Booklet.		2030 2040	3030 3040
OUP	*Farm Machinery.* (12th edition.) Claude Culpin. Don Mills, ON: Oxford University Press, 1992. Textbook.		2030	3030
CTV	*Farmer Buck: W5 Series.* Toronto, ON: CTV Television Network Ltd., 1992. Video.		2090	3090

Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
SSC	*Farming Facts 1996: Statistical Insights on Canadian Agriculture.* Ottawa, ON: Statistics Canada, 1993. Booklet updated annually.	1010		3010
AGP	*Field Shelter Belts for Soil Conservation.* Edmonton, AB: Alberta Agriculture, Print Media Branch, 1992. Booklet.		2030	3030
FREI	*Florist Review, The.* Frances Porterfield. Topeka, KS: Florists' Review Enterprises Incorporated, 1988. Periodical.	1080	2080	3080
ENED	*Focus On Series (Acidic Deposition, Air Quality, Environment, Greenhouse Effect, Land Reclamation, Ozone Depletion, Pesticides, Pollution, Recycling, Water Conservation).* Edmonton, AB: Alberta Environmental Protection, Education Branch. Booklets.	1110	2130	3010 3110 3130
OFAC	*Food For Thought: Facts About Food and Farming in Canada.* Alan Herscovici. Mississauga, ON: Ontario Farm Animal Council. Brochure.			3010 3130
PBC	*Green Future: How To Make A World of Difference.* Lorraine Johnson. Markham, ON: Penguin Books, 1990. Text.			3010 3130
BBC	*Guess What's Coming to Dinner.* Toronto, ON: BBC Education and Training Sales, 1990. Video.			3100
AGE	*Growing More Than Food, Growing Alberta?* (Windows Version.) Alberta Agriculture, Food and Rural Development, 1996. CD-ROM. This CD-ROM provides an overview of the diversity of Alberta's agriculture industry, and its economics, social and environmental significance to all Albertans. Topics covered include primary production, agrifoods, distribution and inspection, food retailing, sustainability and lifestyle contributions.	1010 1030 1060 1110		
ENED	*Household Hazardous Wastes Handbook, The.* Edmonton, AB: Alberta Special Waste Management Corporation, 1991. Booklet.	1110	2130	3010 3130
PBI	*Houseplant Expert, The.* D.G. Hessayon. Britannica House, Waltham Cross, Herts, England: PBI Publications. Text.	1080	2080	3080

Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
OCV	*How Green Is Your School?* Don E. McAllister. Ottawa, ON: Ocean Voice, 1991. Booklet.			3010 3130
AGME	*In Balance With Nature.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1991. Video.			3010 3130
NEL	*International Agriculture.* Finley, E and R. Price. Delmar Publishers. ITP Nelson Canada, 1994. Text and Instructor's Guide. This comprehensive text will teach students how environmental, social and political factors shape agriculture throughout the world. A multitude of case studies, photos and illustrations provide a real world focus. Extensive coverage of developing nations, environmental, social and political factors and agricultural commodity marketing and trade. Provides an opportunity to view world-wide employment opportunities. An instructor's guide accompanies the text.			3010 3130
ENED	*Land Conservation Education Program.* (Readings Grades 10–12.) Edmonton, AB: Alberta Environmental Protection, Education Branch. Booklet.	1030 1110	2030 2040 2060 2120	3010 3120 3130
NEL	*Land Use and Abuse.* Terri Willis. Chicago, IL: Childrens Press, 1992. Text.	1110	2030 2120	3010 3030 3120 3130
LPP	*Lois Hole's Bedding Plant Favorites.* Lois Hole. Lone Pine Publishing, 1994. This book has 350 close-up colored photographs and many step-by-step instructions on growing annual bedding plants. Advice is given on when and where to plant seedlings, frost tolerance, height ranges, growing needs and organizational tips.	1030	2030	3030
LPP	*Lois Hole's Bedding Perennial Favorites.* Lois Hole. Lone Pine Publishing, 1995. A richly illustrated book with gardening instructions and tips. Detailed information is given on 100 perennial plants. Tips are given on garden planning, planting strategies, flower colors, light requirements and nutrient needs. Tips for solving common problems and a blooming period chart are most beneficial to anyone who grows perennials.	1030	2030	3030

Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
LPP	*Lois Hole's Tomato Favorites.* Lois Hole. Lone Pine Publishing, 1996. Beautifully illustrated, a must for all tomato growers. This book provides tips on: growing tomatoes of all sizes, planting, pruning, treating problems and maturation days. A chart for frost-free days in various cities in Canada and the United States is given. Scrumptious recipes from world class restaurants and kitchens of tomato lovers are included.	1030	2030	3030
LPP	*Lois Hole's Vegetables Favorites.* Lois Hole. Lone Pine Publishing, 1993. The author offers advice on how to grow, harvest and prepare 32 of her favorite vegetables. She discusses garden design, what to plant and when, containers and small space gardening, pest control and composting. Recipes and nutritional hints are also included.	1030	2030	3030
OAE	*Looking At Food Systems.* (The Transition Years, Grades 7–9). Milton, ON: Ontario Agri-Food Education Inc., 1993. Teacher Resource Booklet.	1030 1060 1090		
CCGP	*Manual of Pest Control, The.* (5th edition.) West, et al. Department of National Defense. Canadian Communication Group Publishing, 1983. This publication presents information on the life cycles and habits of pests and provides current advice on methods, equipment and material recommended for their control. A broader definition of the word "pest" has been adopted in this manual to include insects, animals and plants.		2100	3090 3110
AGME	*Matter of Soil, A.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1985. Video.		2030 2120	3030 3120
NEL	*Modern Livestock and Poultry Production.* (4th edition.) James R. Gillespie. Albany, NY: Delmar Publishers Inc., 1992. Text.		2040	3040
ACC	*Oh Gully – Where is the Soil?* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Tustian Film Productions, 1983. Video.		2030 2120	3010 3030 3120 3130
GCF	*On the Line.* Glenwood, AB: Glenwood Cheese Factory and Food Processors' Institute, 1985. Video.	1060	2050	3050

Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No.		
		1	2	3
ACC	*Pest Wars.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1984. Video.		2030 2100	3030
ENED	*Pesticide Education Program.* Edmonton, AB: Alberta Environmental Protection, Education Branch. Teacher Resource Booklet, Resource Sheets and Student Materials.	1030 1100	2030 2060 2130	3010 3030 3050 3130
SSC	*Prairie Soils: The Case for Conservation.* Regina, SK: Prairie Farm Rehabilitation Administration, 1989. Booklet.		2030 2120	3030 3120 3130
SSC	*Primer on Fresh Water, A.* Ottawa, ON: Minister of the Environment, Minister of Supply and Services Canada, 1993. Teacher Guide Book.	1110		3130
SSC	*Primer on Waste Management, A.* Ottawa, ON: Environment Canada, 1993. Booklet.			3010 3130
ACC	*Reason Why, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Century II Motion Pictures, 1983. Video.	1010		3010
SSC	*Recommended Code of Practice for the Care & Handling of Farm Animals.* Ottawa, ON: Agriculture Canada, 1991. Booklet series.		2020 2040	3040
CFI	*Role of Fertilizers in Sustainable Agriculture and Food Production, The.* Ottawa, ON: Canadian Fertilizer Institute, 1990. Booklet.		2030	3030 3130
AGME	*Salt Woes.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1986. Video.		2030 2120	3030 3120
ACC	*Sense of Humus, A.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and National Film Board, 1976. Video.		2030	3010 3030 3130
AGME	*Space Age Agriculture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1990. Video.	1100		
AGP	*Story of Soil and Water Conservation in Alberta, The.* Alberta Agriculture, 1989. Booklet.	1110	2120	3110 3120

Other Resources (continued)

Distributor Code	Other Resources	Levels/Module No. 1	2	3
ACC	*Sun Changers, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Elanco Division, Eli Lilly, 1978. Video.		2040	3040
AGME	*Urge to Till, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Image Works, 1990. Video.		2030 2120	3010 3030 3110 3120 3130
ENED	*Water In Alberta: The Living Flow.* Edmonton, AB: Alberta Environmental Protection, Education Branch, 1993. Teacher Resource Kit.			3010 3110 3130
EPPC	*Water Management in Alberta.* Edmonton, AB: Alberta Environment, 1991. Booklet.			3110 3130
ENED	*Water Quality Questions: The Nature and Importance of Water Quality Variables in Alberta.* Edmonton, AB: Alberta Environmental Protection, Education Branch, 1990. Teacher guide and student booklet.	1030 1110		3010 3110 3130
ACC	*Water Water: Making the Most of Moisture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1988. Video.		2030 2040	3030 3040 3110
AGP	*Weed Seedling Identification.* Edmonton, AB: Alberta Agriculture, Print Media Branch, 1990. Booklet.		2030 2060	3030 3060

ADDITIONAL RESOURCES

Available to Career and Technology Studies (CTS) teachers, locally and provincially, are many sources of information that can be used to enhance CTS. These sources are available through the community (e.g., libraries, boards, committees, clubs, associations) and through government agencies, resource centres and organizations. Some sources, e.g., government departments, undergo frequent name and/or telephone number changes. Please consult your telephone directory or an appropriate government directory.

The following is a partial list of sources to consider:

TEACHER–LIBRARIANS

Planned and purposeful use of library resources helps students grow in their ability to gather, process and share information. Research activities require access to an adequate quantity and variety of appropriate, up-to-date print and nonprint resources from the school library, other libraries, the community and additional sources. Some techniques to consider are:

- planning together
- establishing specific objectives
- integrating research skills into planning.

Cooperation between the teacher-librarian and the subject area teacher in the development of effectively planned resource-based research activities ensures that students are taught the research skills as well as the subject content. Also see *Focus on Research: A Guide to Developing Student's Research Skills* referenced in the Alberta Education resources section.

ALBERTA EDUCATION SOURCES

Alberta Government telephone numbers can be reached toll free from outside Edmonton by dialing 310–0000.

The following monographs are available for purchase from the Learning Resources Distributing Centre. Refer to the Distributor Directory at the end of this section for address, telephone, fax and Internet address.

Please consult the "Support Documents" section or the "Legal, Service and Information Publications" section in the LRDC *Buyers Guide* for ordering information and costs.

Developmental Framework Documents

- *The Emerging Student: Relationships Among the Cognitive, Social and Physical Domains of Development,* 1991 (Stock No. 161555)

  This document examines the child, or student, as a productive learner, integrating all the domains of development: cognitive, social and physical. It emphasizes the need for providing balanced curriculum and instruction.

- *Students' Interactions Developmental Framework: The Social Sphere,* 1988 (Stock No. 161399)

  This document examines children's perceptual, structural and motor development and how such physical development affects certain learning processes.

- *Students' Physical Growth: Developmental Framework Physical Dimension*, 1988 (Stock No. 161414)

  This document examines children's normal physical growth in three areas: perceptual, structural and motor development. In none of these areas is the child's growth in a single continuous curve throughout the first two decades of life. Physical growth is characterized by periods of rapid growth and periods of slower growth. Consequently, differences and changes in growth patterns may affect the timing of certain learning processes.

Other

- *Focus on Research: A Guide to Developing Students' Research Skills*, 1990 (Stock No. 161802)

  This document outlines a resource-based research model that helps students manage information effectively and efficiently, and gain skills that are transferable to school and work situations. This model provides a developmental approach to teaching students how to do research.

- *Teaching Thinking: Enhancing Learning*, 1990 (Stock No. 161521)

  Principles and guidelines for cultivating thinking, ECS to Grade 12, have been developed in this resource. It offers a definition of thinking, describes nine basic principles on which the suggested practices are based, and discusses possible procedures for implementation in schools and classrooms.

ACCESS: The Education Station

ACCESS: The Education Station offers a variety of resources and services to teachers. For a nominal dubbing and tape fee, teachers may have ACCESS: The Education Station audio and video library tapes copied. ACCESS: The Education Station publishes listings of audio and video cassettes as well as a comprehensive programming schedule.

Of particular interest are the CTS videos, which are available with utilization guides. The guides outline key points in each video and suggest questions for discussion, classroom projects and other activities. Video topics are listed in the Support Learning Resources section of this guide. The videos and accompanying support material can be obtained from ACCESS: The Education Station. Refer to the Distributor Directory at the end of this section for address, telephone, fax and Internet address.

GOVERNMENT SOURCES

National Film Board of Canada (NFB)

The NFB has numerous films and videotapes that may be suitable for Career and Technology Studies strands. For a list of NFB films and videotapes indexed by title, subject and director, or for purchase of NFB films and videotapes, call 1-800-267-7710 (toll free) or Internet address: http://www.nfb.ca

ACCESS: The Education Station and some school boards have acquired duplication rights to some NFB videotapes. Please contact ACCESS: The Education Station or consult the relevant catalogues in your school or school district.

The Edmonton Public Library and the Calgary Public Library have a selection of NFB films and videotapes that can be borrowed free of charge with a Public Library borrower's card. For further information, contact:

Edmonton Public Library
Telephone: 403-496-7000

Calgary Public Library
Telephone: 403-260-2650

For further information contact:

Statistics Canada
Regional Office
8th Floor, Park Square
10001 Bellamy Hill
Edmonton, AB T5J 3B6
Telephone: 403-495-3027
Fax: 403-495-5318
Internet address: http://www.statcan.ca

Statistics Canada produces periodicals, reports, and an annual year book.

Resource Centres

Urban Resource Centres

Instructional Services
Elk Island Public Schools
2001 Sherwood Drive
Sherwood Park, AB T8A 3W7
Telephone: 403–464–8235
Fax: 403–464-8033
Internet Address: http://ei.educ.ab.ca

Learning Resources Centre
Red Deer Public School Board
4747 – 53 Street
Red Deer, AB T4N 2E6
Telephone: 403–343–8896
Fax: 403–347–8190

Instructional Materials Centre
Calgary Separate School Board
6220 Lakeview Drive SW
Calgary, AB T3E 5T1
Telephone: 403–298–1679
Fax: 403–249–3054

School, Student, Parent Services Unit
Program and Professional Support Services Sub Unit
Calgary Board of Education
3610 – 9 Street SE
Calgary, AB T2G 3C5
Telephone: 403–294–8542
Fax: 403–287–9739

After July 1, 1997, please contact the School, Student, Parent Services Unit regarding the relocation of the Loan Pool Resource Unit.

Learning Resources
Edmonton Public School Board
Centre for Education
One Kingsway Avenue
Edmonton, AB T5H 4G9
Telephone: 403–429–8387
Fax: 403–429–0625

Instructional Materials Centre
Medicine Hat School District No. 76
601 – 1 Avenue SW
Medicine Hat, AB T1A 4Y7
Telephone: 403–528–6719
Fax: 403–529–5339

Resource Centre
Edmonton Catholic Schools
St. Anthony's Teacher Centre
10425 – 84 Avenue
Edmonton, AB T6E 2H3
Telephone: 403–439–7356
Fax: 403–433–0181

Instructional Media Centre
Northern Lights School Division No. 69
Bonnyville Centralized High School
4908 – 49 Avenue
Bonnyville, AB T9N 2J7
Telephone: 403–826–3366
Fax: 403–826–2959

Regional Resource Centres

Zone 1

Zone One Regional Resource Centre
P.O. Box 6536
10020 – 101 Street
Peace River, AB T8S 1S3
Telephone: 403–624–3187
Fax: 403–624–5941

Zone 2/3

Central Alberta Media Services (CAMS)
182 Sioux Road
Sherwood Park, AB T8A 3X5
Telephone: 403–464–5540
Fax: 403–449–5326

Zone 4

Information and Development Services
Parkland Regional Library
5404 – 56 Avenue
Lacombe, AB T4L 1G1
Telephone: 403–782–3850
Fax: 403–782–4650
Internet Address: http://rtt.ab.ca.rtt/prl/prl.htm

Zone 5

South Central Alberta Resource Centre (SCARC)
Golden Hills Regional Division
435A Hwy 1
Westmount School
Strathmore, AB T0J 3H0
Telephone: 403–934–5028
Fax: 403–934–5125

Zone 6

Southern Alberta Learning Resource Centre (SALRC)
Provincial Government Administration Building
909 Third Avenue North, Room No. 120
Box 845
Lethbridge, AB T1J 3Z8
Telephone: 403–320–7807
Fax: 403–320–7817

OTHER GOVERNMENT SOURCES

Agriculture Canada

Website: www.agr.ca

Communications Branch
930 Carling Avenue
Sir John Carling Bldg.
Ottawa, ON
K1A 0C5
Telephone: 613–759–1000
Fax: 613–759–6726
E-mail: pirs@em.agr.ca

General and Technical Publications (a comprehensive listing of free and inexpensive print materials on a variety of topics in agriculture; updated each year).

Food Production and Inspection Branch
J.G. O'Donaghue Bldg.
Rm 205, 7000 - 113 Street
Edmonton, AB
T6H 5T6
Telephone: 403–495–3333
Or

#654, 220 - 4th Avenue SE
Calgary, AB
T2G 4X3
Telephone: 403–292–4364
Fax: 403–292–6132

Labelling Division
J.G. O'Donaghue Bldg.
Rm 205, 7000 - 113 Street
Edmonton, AB
T6H 5T6
Telephone: 403–495–7287
Fax: 403–495–3359

Or

102, 3650 – 36 Street NW
Calgary, AB
T2L 2L1
Telephone: 403–299–7660
Fax: 403–221–3296

Alberta Advanced Education and Career Development

Information Development and Marketing
9th Floor, City Centre Building
10155 – 102 Street
Edmonton, AB
T5J 4L5
Telephone: 403–422–1794
Fax: 403–422–5319
E-mail: careerinfo@aecd.gov.ab.ca

Alberta Careers Beyond 2000
Alberta Careers Beyond 2000: Industry Sector Profiles.
Alberta Careers Beyond 2000: Occupational Profiles.

Videos on career planning and entrepreneurial topics are available through the library of this department. Call 403–422–4752 for more information. The following videos are representative of the library's holdings:

The Entrepreneur
Get a Job
A Head for Business
The Seven Phases of a Job Interview.

Alberta Agriculture, Food and Rural Development

Website: www.agric.gov.ab.ca

Publications
7000 – 113 Street
Edmonton, AB
T6H 5T6
Telephone: 403–427–2121
Fax: 403–427–2861

Publications List (a comprehensive listing of free and inexpensive print materials on a variety of topics in agriculture; updated each year).

Multi-Media Branch
7000 – 113 Street
Edmonton, AB
T6H 5T6
Telephone: 403–427–2127
Toll free: 1-800–292–5697
Fax: 403–427–2861

Audio Visual Catalogue (an annotated listing of films and videos available for loan upon request; updated each year).

Agricultural Education and Community Services Branch
2nd Floor, 7000 – 113 Street
Edmonton, AB
T6H 5T6
Telephone: 403–427–2171
Fax: 403–422–7755

Agriculture Ambassador Program
Agriculture in the Classroom Program
Newsletter and Resource Listing
Agriculture Summer Institute
Farm Safety Program
Green Certificate Farm Training Program
Home Study Programs.

4-H Branch
2nd Floor, 7000 – 113 Street
Edmonton, AB
T6H 5T6
Telephone: 403–427–2412
Fax: 403–422–7755

4-H Project Materials
Handling Pesticides: Are You Protected?
Protective Clothing For Farm Welders.

Crop Diversification Centre North
(formerly Alberta Tree Nursery and Horticulture Centre)
R.R. #6, 17507 Fort Road
Edmonton, AB
T5B 4K3
Telephone: 403–422–1789
Fax: 403–422–6096

Crop Diversification Centre South
(formerly Alberta Special Crop and Horticulture Research Centre)
S.S. 4
Brooks, AB
T1R 1E6
Telephone: 403–362–1300
Fax: 403–362–1306

Alberta Environmental Protection
Website: www.gov.ab.ca/~env/index.hmtl
Communications Division
9th Floor, Petroleum Plaza, South Tower
9915 - 108 Street
Edmonton, Alberta
T5K 2G8
Telephone: 403–427–8636
Fax: 403–422–6339

EP LINK (a newsletter about projects, programs and activities undertaken by Alberta Environmental Protection staff)

Strategic and Regional Support
Education Branch
(handles inquiries formerly directed to the Environmental Council of Alberta)
11th Floor, South Petroleum Plaza
9915 - 108 Street
Edmonton, AB
T5K 2G8
Telephone: 403–427–6310
Fax: 403–422–5136
E-mail: envedu@env.gov.ab.ca

Land Conservation Education Program
Pesticide Education Program
The Water Literacy Program
Focus On Series
Poster Education Series

(Workshops and presentations on these program materials can be arranged.)

Environment Canada

Action 21
27th Floor, #10 Wellington Street
Hull, PQ
K1A 0H3
Telephone: 1-800-668-6767

Environmental Citizenship Series:
- *A Primer on Environmental Citizenship*
- *The Nature of Canada: A Primer on Spaces and Species*
- *A Primer on Climate Change*
- *A Primer on Water*

Communications Division
Environmental Conservation Branch
Western & Northern Region
(handles inquiries formerly directed to the Canadian Wildlife Service)
200, 4999 – 98 Avenue
Edmonton, AB
T6B 2X3
Telephone: 403-951-8720
Fax: 403-495-2615

Wildlife & environmental publications

Inquiry Centre
351 St. Joseph Blvd.
Hull, PQ
K1A 0H3
Telephone: 819-997-2800
Fax: 613-953-2225

Caring for the Green Zone - Riparian Areas and Grazing Management

Industry Canada
(handles inquiries formerly directed to Industry & Science Canada)

Website: http://strategis.ic.gc.ca

Northern Region
540 Canada Place
9700 Jasper Avenue
Edmonton, AB
T5J 4C3
Telephone: 403-495-4782

Or

Southern Region
#400, 639 – 5th Avenue SW
Calgary, AB
T2P 0M9
Telephone: 403-292-4575

Natural Resources Canada
Distribution Section
Communications NRCan
580 Booth Street, 20th Floor
Ottawa, ON K1A 0E4
Telephone: 616-992-0759/995-6783
Fax: 616-996-9094

(A *Publications List* is available upon request.)

PROFESSIONAL ASSOCIATIONS

Alberta Association of Landscape Architects
#2, 9804 – 47 Avenue
Edmonton, AB
T6E 5P3
Telephone: 403-435-9902
Fax: 403-435-7503

Alberta Society of Professional Biologists
Website: www.ccinet.ab.ca/aspb
#2 – 9804 – 47th Avenue
Edmonton, AB
T6E 5P3
Telephone: 403-434-5765
Fax: 403-435-7503
E-mail: aspb@ccinet.ab.ca

Alberta Teachers' Association
Website: www.teachers.ab.ca
Barnett House
11010 – 142 Street
Edmonton, AB
T5N 2R1
Telephone: 1-800-232-7208
403-453-2411
Fax: 403-455-6481

CTS Council
Environmental and Outdoor Education Council
Alberta Global Education Project
Science Council

Alberta Veterinary Medical Association
100, 8615 – 149 Street
Edmonton, AB
T5R 1B3
Telephone: 403–489–5007
Fax: 403–484–8311

Canadian Association of Agricultural Engineers
Box 381, RPO University Saskatoon
Saskatoon, SK
S7N 4J8
Telephone: 306–966–5335
Fax: 306–966–5334
E-mail: norum@engr.usask.ca

Canadian Association of Plant Physiologists
c/o Department of Botany
University of Guelph
Guelph, ON
N1G 2W1
Telephone: 519–824–4120 (let ring)
Fax: 519–767–1991

AGRICULTURE RESEARCH

Alberta Agriculture, Food and Rural Development

Crop Diversification Centre North
(formerly the Alberta Tree Nursery and Horticulture Centre)
R.R. #6, 17507 Fort Road
Edmonton, AB
T5B 4K3
Telephone: 403–422–1789
Fax: 403–422–6096

Crop Diversification Centre South
(formerly the Alberta Special Crop and Horticulture Research Centre)
S.S. 4
Brooks, AB
T1R 1E6
Telephone: 403–362–1300
Fax: 403–362–1306

Alberta Research Council

Website: www.arc.ab.ca

Mailing Address:
P.O. Box 8330
Edmonton. AB
T6H 5X2

Street Address:
250 Karl Clark Road
Edmonton. AB
T6H 5X2
Telephone: 403–450–5111
Fax: 403–450–1490

INDUSTRY ORGANIZATIONS

Note: See the *Alberta Farm & Ranch Directory* (Rural Education and Development Association) and the *Agricultural Education Resource Listing* (Alberta Agriculture, Food and Rural Development) for more extensive listings.

Dairy

Alberta Dairy Association
Box 3452
Leduc, AB
T9E 6M2
Telephone: 403–387–3559
Fax: 403–387–3559

Alberta Goat Breeders Association
Site 3, Box 1, RR #4
Calmar, AB
T0C 0V0
Telephone: 403–985–3863

Alberta Milk Producers Society
14904 – 121A Avenue
Edmonton, AB
T5V 1A3
Telephone: 403–453–5942/1–800–252–7530
Fax: 403–455–2196

Dairy Nutrition Council of Alberta
14904 – 121A Avenue
Edmonton, AB
T5V 1A3
Telephone: 403–453–5942 / 1–800–252–7530

Fruits and Vegetables

Alberta Fresh Vegetable Producers
220F – 12 Street A North
Lethbridge, AB
T1H 2J1
Telephone: 403–327–0447
Fax: 403–327–0766

Alberta Greenhouse Growers Association
Website: www.hortca.com
C/O Olds College
Land Sciences Bldg.
4500 Street
Olds, AB
T4H 1R6

Alberta Market Gardeners' Association
4506 – 44Street
Bonnyville, AB
T9N 1L6
Telephone/Fax: 403–826–1709

Alberta Sugar Beet Growers Marketing Board
4900 – 50 Street
Box 190
Taber, AB
T0K 2G0
Telephone: 403–223–1110
Fax: 403–223–1022

Alberta Vegetable Growers Marketing Board
5217 – 50 Avenue
Taber, AB
T1G 1V4
Telephone: 403–223–4242
Fax: 403–223–3130

Fruit Growers Society of Alberta
Box 3979
Leduc, AB
T9E 6M8
Telephone: 403–961–2171

Potato Growers of Alberta
Website: www.potatonet.com
#6, 1323 – 44th Avenue SW
Calgary, AB
T2E 6L5
Telephone: 403–291–2430
Fax: 403–291–2641

Grains

Alberta Barley Commission
237, 2116 – 27 Avenue NE
Calgary, AB
T2E 7A6
Telephone: 403–291–9111/1–800–265–9111
Fax: 403–291–0190

Alberta Corn Committee
Box 822
Lethbridge, AB
T1J 3Z8
Telephone: 403–381–5127
Fax: 403–382–4526

Alberta Soft Wheat Producers Commission
Box 875,
1014 – 3 Avenue N
Lethbridge, AB
T1J 3Z8
Telephone: 403–380–4189
Fax: 403–328–6880

Alberta Wheat Pool
Farm Information Services
505, 2nd Street SW
Box 2700
Calgary, AB
T2P 2P5
Telephone: 403–290–5568
Fax: 403–290–5550

FIS in the Classroom (farm management simulation program)

Alberta Winter Wheat Producers Commission
1205 Michigan Place
Lethbridge, AB
T1K 3P4
Telephone: 403–328–0059
Fax: 403–328–0969

Canadian Seed Growers' Association
5030 – 50 Street
Lacombe, AB
T4L 1W8
Telephone: 403–782–4641

The Grain Academy
Box 2700
Calgary, AB T2P 2P5
Telephone: 403–263–4594

Oat Producers Association of Alberta
PO Box 3024
Leduc, AB
T9E 6L8
Telephone/Fax: 403-985-3644

Western Barley Growers Association
232 Stockman's Centre
2116 – 27 Avenue NE
Calgary, AB
T2E 7A6
Telephone: 403-291-3630
Fax: 403-291-9841

Livestock

Alberta-Canada All Breeds Association

Mailing Address:
PO Box 99
Red Deer, AB
T4N 5E7

Street Address:
2nd Floor Empire Bldg.
4909 – 48 Street
Red Deer, AB
T4N 1S8
Telephone: 403-342-2551
Fax: 403-346-4910

Alberta Cattle Commission
216, 6715 – 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 403-275-4400
Fax: 403-274-0007

Caring for the Green Zone - Riparian Areas and Grazing Management
Just Facts
Classroom Agriculture Program

Alberta Pork Producers Development Corp.
10319 Princess Elizabeth Avenue
Edmonton, AB
T5G 0Y5
Telephone: 403-474-8288
Fax: 403-471-8065

Or

205, 259 Midpark Way SE
Calgary, AB
T2X 1M2
Telephone: 403-256-2764
Fax: 403-256-4414

Alberta Sheep and Wool Commission
203, 2916 – 19 Street NE
Calgary, AB
T2E 6Y9
Telephone: 403-735-5111
Fax: 403-735-5110

Beef Information Centre
215, 6715 – 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 403-275-5890
Fax: 403-274-5686

Canada Beef Export Federation
235, 6715 – 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 403-274-0005
Fax: 403-274-7275

Canada Pork International
Website: www.cfta.ca
1101, 75 Albert Street
Ottawa, ON
K1P 5E7
Telephone: 613-236-9886
Fax: 613-236-6658

Canadian Cattlemen's Association
215, 6715 – 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 403-275-8558
Fax: 403-274-5686

Oilseeds

Alberta Canola Producers Commission
170, 14315 – 118 Avenue
Edmonton, AB T5L 4S6
Telephone: 403-454-0844
Fax: 403-451-6933

Alberta Safflower Growers Association
Box 822
Lethbridge, AB
T1J 3Z8
Telephone: 403-381-5124
Fax: 403-382-4526

Canola Council of Canada
Website: www.canola-council.org
400, 167 Lombard Avenue
Winnipeg, MB
R3B 0T6
Telephone: 204-982-2100
Fax: 204-942-1841

Poultry

Alberta Chicken Producers
101, 11826 – 100 Avenue
Edmonton, AB
T5K 0K3
Telephone: 403-488-2125
Fax: 403-488-3570

Alberta Egg Producers Board
15, 1915 – 32 Avenue NE
Calgary, AB
T2E 7C8
Telephone: 403-250-1197
Fax: 403-291-9216

Alberta Hatching Egg Marketing Board
14815 – 119 Avenue
Edmonton, AB
T5L 2N9
Telephone: 403-451-5837
Fax: 403-452-8726

Alberta Turkey Growers Marketing Board
212, 8711A – 50 Street
Edmonton, AB
T6B 1E7
Telephone: 403-465-5755
Fax: 403-465-5528

Speciality

The Alberta Beekeepers Association
16715 – 113 Avenue
Edmonton, AB
T5M 2X2
Telephone: 403-489-6949
Fax: 403-489-3041

Alberta Honey Producers Cooperative
Box 3909
70 Alberta Avenue
Spruce Grove, AB
T17X 3B1
Telephone: 403-962-5573
Fax: 403-962-1653
E-mail: honey@beemaid.com

Canadian Organic Growers
Box 6408, Station J
Ottawa, ON K2A 3Y6

Alberta Ostrich Breeders' Association
RR #2
Crossfield, AB
T0M 0S0
Telephone/Fax: 403-946-4037
1-800-416-0301

Alberta Venison Council
17316 - 106A Avenue
Edmonton, AB
T5S 1E6
Telephone: 403-481-6754

Canadian Llama / Alpaca National Association
Box 690
Oyen, AB
T0J 2J0
Telephone: 403-664-3764
Fax: 403-664-3007

Floral Design

Flowers Canada
(The Association of Canadian Florists)
7856 - 5th Line South
R.R.# 4
Milton, ON
L9T 2X8
Telephone: 905-875-0707
1-800-364-6349
Fax: 905-875-3494

Flowers Canada, Alberta Region
(Note: This contact changes every 2 years.)
C/O Marg West
Valley Flowers
Box 622
Canmore, AB
T0L 0M0
Telephone: 403-678-5254

General

Prairie Farmers Rehabilitation Administration

Website: http://www.agr.ca/pfra/pfintroe.htm

Suite 1200
10130 – 103 Street
Edmonton, AB
T5J 3N9
Telephone: 403–495–3307
Fax: 403–495–4504

Or

632 Harry Hays Building
220 – 4 Avenue SE
Box 2906
Calgary, AB
T2G 4X3
Telephone: 403–292–5638
Fax: 403–292–5659

Alberta Irrigation Project Association
909 Lethbridge Centre Tower
400 – 4th Avenue South
Lethbridge, AB
T1J 4E1
Telephone: 403–328–3063
Fax: 403–327–1043

Growing Alberta
6th Floor, 1040 – 7th Avenue SW
Calgary, AB
T2P 3G9
Telephone: 403–231–1615 / 299–5864
Fax: 403–299–2670
E-mail: nbarber@fieldstone.ca

(*Growing Alberta* is an industry-led, public awareness program designed to share information about agriculture. Provides a variety of educational materials, including display units, posters, print tabloids, CD-ROMs and other publicity materials.)

OTHER AGENCIES

Alberta Foundation for Animal Care
Cambrian P.O. Box 75028
Calgary, AB T2K 6J8
Telephone: 403–777–0445
Fax: 403–777–0447

Alberta Foundation for Economic Education
901, 10179 – 105 Street
Edmonton, AB T5J 1E2
Telephone: 403–421–9331
Fax: 403–426–2987

Alberta Safety Council
201, 10526 Jasper Avenue
Edmonton, AB T5J 1Z7
Telephone: 403–428–7555 (1–800–301–6407)
Fax: 403–428–7557

(Provides a range of transportation and occupational health and safety training programs endorsed by industry partners.)

Alberta Science and Technology Hotline
Website: www.cadvision.com/calg_sci_net
Peace River Hotline, Northwest Alberta
Telephone: 403–539–9847
Fax: 403–539–0522

Northeast Alberta, including Edmonton and Red Deer Regions:
Telephone: 403–448–0055
Fax: 403–453–2711

Calgary Region
Telephone: 403–263–6226
Fax: 403–230–8488
E-mail: scihot@cadvision.com

Praxis Hotline, Medicine Hat Region
Telephone: 403–526–4237

(The *Alberta Science and Technology Hotline* provides teachers with a direct line to the science community to access information and expertise.)

Alberta Society for the Prevention of Cruelty to Animals
Education Coordinator
10806 – 124 Street
Edmonton, AB T5M 0H3
Telephone: 403–447–3600
Fax: 403–447–4748

School Programs (an outline of workshops, classroom visits and learning resources available)

Canadian Foundation for Economic Education
501, # 2 St. Clair Avenue West
Toronto, ON
M4V 1L5
Telephone: 416-968-2236
Fax: 416-968-0488

Environomics: Exploring links between the economy and the environment
Entrepreneurship: A Primer for Canadians
Labour Market: Teacher's Resource Package

Ducks Unlimited Canada
Website: www.ducks.ca
PO Box 1160
Oak Hammock Marsh
Stonewall, MB R0C 2Z0
Telephone: 204-467-3000
1-800-665-3825
Fax: 204-467-9025

Alberta Office:
202 - 10470 - 176 Street
Edmonton, AB T5S 1L3
Telephone: 403-489-2002
Fax: 403-489-1856

FEESA, An Environmental Education Society

Website: www.telusplanet.net/public/feesa

900, 10150 - 100 Street
Edmonton, AB
T5J 0P6
Telephone: 403-421-1497
Fax: 403-425-4506
E-mail: feesa@telusplanet.net

(*FEESA* offers education training and resource materials focusing on a variety of environmental and educational needs. Programs are developed in partnership with business, industry, government, environmental and education groups.)

Green Teacher

Website: www.web.ca/~greentea

95 Robert Street
Toronto, ON
M5S 2K5
Telephone: 416-960-1244
Fax: 416-925-3474
E-mail: greentea@web.ca

(A magazine by and for educators to enhance environmental and global education across the curriculum.)

Junior Achievement of Northern Alberta
(Alberta north of Lacombe, and NWT)
5-161, 10700 - 104 Avenue
Edmonton, AB
T5J 4S2
Telephone: 403-428-1421
Fax: 403-428-1031

Junior Achievement of Southern Alberta
(Lacombe and south)
739 10 Avenue SW
Calgary, AB
T2R 0B3
Telephone: 403-237-5252
Fax: 403-261-6988
E-mail; info@jasab.org

(Materials are available only where Junior Achievement has identified community business consultants and provided inservice.)

The Pembina Institute for Appropriate Development

Website: www.dvnet.drayton-valley.ab.ca/environ.pembina.htm

P.O. Box 7558
Drayton Valley, AB
T7A 1S7
Telephone: 403-542-6272
Fax: 403-542-6464
E-mail: piad@ccinet.ab.ca

The Canadian Environmental Education Catalogue.

RADARSAT International

Website: www.rsi.ca

Client Services
3851 Shell Road, Suite 200
Richmond, BC
V6X 2W2
Telephone: 604–244–0400
Fax: 604–244–0404
E-mail: info@rsi.ca

(Provides a range of information, products and services relevant to applications of remote radar satellite sensing technology in gathering environmental and resource data.)

Recycle Infoline
(handles inquires previously directed to the Alberta Special Waste Management Corporation)
12th floor South Petroleum Plaza
9915 – 108 Street
Edmonton, AB
T5K 2G8
Telephone: 1–800–463–6326
Fax: 403–427–0413

(Provides information regarding environmental and hazardous wastes.)

Rural Education and Development Association
14815 – 119 Avenue
Edmonton, AB
T5L 2N9
Telephone: 403–451–5959
Fax: 403–452–5385
E-mail: ruraled@compusmart.ab.ca

Alberta Farm and Ranch Directory
Agriculture Education Network Newsletter
List of speakers for schools
Teacher resource package on cooperatives.

The Science Alberta Foundation
2100, 700 - 6th Avenue SW
Calgary, AB
T2P 0T8
Telephone: 403–260–1996
Fax: 403–260–1165
E-mail: litebulb@supernet.ab.ca

(*The Science Alberta Foundation* promotes science literacy throughout the province. Their programs are hands-on, and include travelling exhibitions and professional development courses.)

ADDITIONAL WEBSITES OF NOTE

Agriculture Online

http://www.agriculture.com

Agri-Web

http://www.agr.ca/agriweb/agriweb.htm

OMAFRA

http://tdg.uoguelph.ca/omafra

AgrEvo Canada

http://www.hcc.com/agrevo

DISTRIBUTOR DIRECTORY

The entries in the Distributor Directory are arranged alphabetically by code.

CODE	Distributor/Address	Contact Via
ABCC	Alberta Cattle Commission 216 – 6715 8th Street, NE Calgary, AB T2E 7H7	403-275-4400 Fax: 403-274-0007
ACC	ACCESS: The Education Station 3270 – 76 Avenue Edmonton, AB T6B 2N9	403-440-7777 Fax: 403-440-8899 1-800-352-8293 http://www.ccinet.ab.ca/access
ACPC	Alberta Canola Producers Commission #170, 14315 – 118th Avenue Edmonton, AB T5L 4S6	403-452-6487 Fax: 403-451-6933
ADD	Addison-Wesley Publishers Limited See LRDC *Buyers Guide* for information	
AGE	Alberta Agriculture, Food and Rural Development Education and Community Services Branch 7000 – 113 Street Edmonton, AB T6H 5T6	403-427-2171 Fax: 403-422-7755
AGME	Alberta Agriculture, Food and Rural Development Multi-Media Branch 7000 – 113 Street Edmonton, AB T6H 5T6	403-422-3375 Fax: 403-427-2861
AGP	Alberta Agriculture, Food and Rural Development Print Media Branch 7000 – 113 Street Edmonton, AB T6H 5T6	403-427-2121 Fax: 403-427-2861
BBC	BBC Education and Training Sales 65 Heward Avenue Toronto, ON M4M 2T5	416-469-1505
CCC	Canola Council of Canada #400, 167 Lombard Avenue Winnipeg, MB R3B 0T6	204-982-2100 Fax: 204-942-1841

Distributor Directory (continued)

CODE	Distributor/Address	Contact Via
CCGP	Canada Communication Group Publishing Government of Canada 45 Sacre-Coeur Blvd. Room D2200 HULL, QC K1A 0S9	819-956-4800 819-956-1620 Fax: 819-994-1498
CFI	Canadian Fertilizer Institute 1540, 360 Alberta Street Ottawa, ON K1R 7X7	613-230-2600
CTV	CTV Program & Archive Sales Suite 1800, 250 Yonge Street Toronto, ON M5B 2N8	416-595-4463 Fax: 416-595-0917
DNC	Dairy Nutrition Council of Alberta 14904 – 121A Avenue Edmonton, AB T5V 1A3	403-453-5942 Fax: 1-800-252-7530 Fax: 403-455-2196
DUCK	Ducks Unlimited Canada P.O. Box 1160 Oak Hammock Marsh Stonewall, MB R0C 2Z0	1-800-665-3825 Fax: 204-467-9025
ENCA	Environment Canada Terrasses de la Chaudiere 27th Floor, 10 Wellington Street Hull, Quebec K1A 0H3	819-953-1595 Fax: 819-994-1412 1-800-668-6767
ENED	Alberta Environmental Protection, Education Branch 11th Floor, South Petroleum Plaza 9915 – 108 Street Edmonton, AB T5K 2G8	403-427-6310 Fax: 403-422-5136
EPPC	Environmental Protection Information Centre Main Floor 9920 – 108 Street Edmonton, AB T5K 2M4	403-422-2079 Fax: 403-427-4407
FREI	Florists' Review Enterprises Inc. P.O. Box 4368 Topeka, KS USA 66604	913-266-0888

Distributor Directory (continued)

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AGRICULTURE

SECTION J: SAMPLE STUDENT LEARNING GUIDES

The following pages provide background information, strategies and a template for developing student learning guides. Also included at the end of this section are several sample student learning guides for Agriculture.

A student learning guide provides information and direction to help students attain the expectations defined in a specified CTS module. It is designed to be used by students under the direction of a teacher.

Many excellent student learning guides (SLGs) are available for use and/or are in the process of being developed. While Alberta Education provides a development template accompanied by some samples, most student learning guide development is being done by individuals and organizations across the province (e.g., school jurisdictions, specialist councils, post-secondary organizations). Refer to the *Career & Technology Studies Manual for Administrators, Counsellors and Teachers* (Appendix 11) for further information regarding student learning guide developers and sources.

Note: A student learning guide is not a self-contained learning package (e.g., Distance Learning Module), such as you might receive from the Alberta Distance Learning Centre (ADLC) or Distance Learning Options South (DLOS).

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SAMPLE STUDENT LEARNING GUIDES

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BACKGROUND INFORMATION

A Student Learning Guide (SLG) is a presentation of information and direction that will help students attain the expectations defined in a specified CTS module. It is designed to be used by students under the direction of a teacher. A SLG is not a self-contained learning package such as you might receive from the Alberta Distance Learning Centre (ADLC) or Distance Learning Options South (DLOS).

Each SLG is based on curriculum and assessment standards as defined for a particular CTS module. Curriculum and assessment standards are defined in this document through:

- module and specific learner expectations (Sections D, E and F)
- assessment criteria and conditions (Sections D, E and F)
- assessment tools (Section G).

The SLG is written with the student in mind and makes sense to the student in the context of his or her CTS program. SLGs are designed to guide students through modules under the direction of the teacher. They can be used to guide:

- an entire class
- a small groups of students
- individual students.

In some instances, the Student Learning Guide may also be used as teacher lesson plans. When using SLGs as teacher lesson plans, it should be noted that they tend to be:

- learner-centred (versus teacher-directed)
- activity-based (versus lecture-based)
- resource-based (versus textbook-based).

Components of a Student Learning Guide

The student learning guide format, as developed by Alberta Education, typically has *seven* components as described below.

1. *Why Take This Module?*

   This section provides a brief rationale for the work the student will do, and also establishes a context for learning (i.e., in relation to the strand, a life pursuit, a specific industry, etc.).

2. *What Do You Need To Know Before You Start?*

   In this section, prerequisite knowledge, skills and attitudes considered necessary for success in the module are identified. Prerequisites may include other modules from within the strand or from related CTS strands, as well as generic knowledge and skills (e.g., safety competencies, the ability to measure/write/draw, prior knowledge of basic information relevant to the area of study).

3. *What Will You Know And Be Able To Do When You Finish?*

   This information must parallel and reflect the curriculum and assessment standards as defined for the module. You may find it desirable to rewrite these standards in less formal language for student use.

4. *When Should Your Work Be Done?*

   This section provides a timeline that will guide the student in planning their work. The timeline will need to reflect your program and be specific to the assignments you give your students. You may wish to include a time management chart, a list of all assignments to be completed, and instructions to the student regarding the use of a daily planner (i.e., agenda book) to organize their work.

5. *How Will Your Mark For This Module Be Determined?*

   This section will interpret the assessment criteria and conditions, assessment standards, assessment tools and suggested emphasis as defined for the module within the context of the projects/tasks completed. Accepted grading practices will then be used to determine a percentage grade for the module—a mark not less than 50% for successful completion. (**Note**: A module is "successfully completed" when the student can demonstrate ALL of the exit-level competencies or MLEs defined for the module.)

6. *Which Resources May You Use?*

   Resources considered appropriate for completing the module and learning activities are identified in this section of the guide. The resources may be available through the Learning Resources Distributing Centre (LRDC) and/or through other agencies. Some SLGs may reference a single resource, while others may reference a range of resources. Resources may include those identified in the Learning Resource Guide (Section I) as well as other sources of information considered appropriate.

7. *Activities/Worksheets*

   This section provides student-centred and activity-based projects and assignments that support the module learner expectations. When appropriately aligned with curriculum and assessment standards, successful completion of the projects and assignments will also indicate successful completion of the module.

Strategies for Developing Student Learning Guides

Prior to commencing the development of a student learning guide, teachers are advised to obtain:

- the relevant Guide to Standards and Implementation
- the student learning guide template.

Information communicated to the student in the SLG must parallel and reflect the curriculum and assessment standards as defined for the module. Therefore, critical elements of the Guide to Standards and Implementation that need to be addressed throughout the SLG include:

- module and specific learner expectations
- assessment criteria and conditions
- assessment standards
- assessment tools.

Additional ideas and activities will need to be incorporated into the student learning guide. These can be obtained by:

- reflecting on projects and assignments you have used in delivering programs in the past
- identifying human and physical resources available within the school and community
- networking and exchanging ideas (including SLGs) with other teachers
- reviewing the range of resources (e.g., print, media; software) identified in the Learning Resource Guide (Section I) for a particular module/strand.

Copyright law must also be adhered to when preparing a SLG. Further information and guidelines regarding copyright law can be obtained by referring to the:

- *Copyright Act*
- *Copyright* and the *Can Copy Agreement*.

A final task in developing a student learning guide involves validating the level of difficulty/challenge/rigour established, and making adjustments as considered appropriate.

A template for developing student learning guides, also available on the Internet, is provided in this section (see "Student Learning Guide Template," pages J.5–10). Several sample student learning guides are also provided in this section (see "Sample Student Learning Guides," starting on page J.11).

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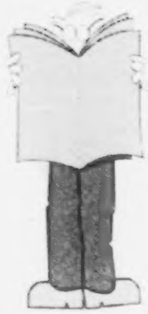
SAMPLE STUDENT LEARNING GUIDE TEMPLATE

WHY TAKE THIS MODULE?



WHAT DO YOU NEED TO KNOW BEFORE YOU START?

WHAT WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

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WHEN SHOULD YOUR WORK BE DONE?

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HOW WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE

WHICH RESOURCES MAY YOU USE?

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ACTIVITIES/WORKSHEETS

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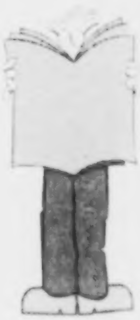
AGRICULTURE

SAMPLE STUDENT LEARNING GUIDE

AGR1030 Production Basics

AGR1030 Production Basics

WHY TAKE THIS MODULE?



- This module is designed to allow you to explore techniques used in plant growth or animal production. Skills learned in this module can be applied to future studies and to produce a commodity for sale.

WHAT DO YOU NEED TO KNOW BEFORE YOU START?

There are no prerequisites identified for this module.

WHAT WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

Upon completion of this module you will be able to:

- identify and demonstrate the basic steps and procedures involved in producing a plant or animal commodity
- describe technological systems used within a plant or animal production enterprise
- identify career opportunities relevant to plant or animal production
- demonstrate basic competencies.

WHEN SHOULD YOUR WORK BE DONE?

Your teacher will give you a timeline for completing tasks and assignments within this module.

You may also wish to use a time-management planning chart to preplan the work that needs to be done in this module. Plan how you will use your class time as well as extra time needed to complete the assignments in this module.

HOW WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE
You must first demonstrate **all** of the competencies required for this module. When you have done this, your percentage mark for the module will be determined as follows:	
• Demonstration of production skills	40%
• Assignments from each section	40%
• Test	20%

WHICH RESOURCES MAY YOU USE?

- *Agriscience*: Fundamentals and Applications
- Seed catalogues.
- Nurseries catalogues.
- Equipment catalogues.

ACTIVITIES/WORKSHEETS

Section 1

This section deals with an evaluation of the facilities and equipment that you have available for your use. This information is important for estimating the number of plants or animals that can be maintained within these areas. With your teacher's help, determine the equipment and areas, both indoors and outdoors, that will be available to you.

1. Draw a diagram of these areas. Include measurements in your drawing and calculate the available space in square metres.
2. Make a list of the equipment available and describe the function of each piece of equipment. It would be useful to include a drawing of the items you are not familiar with.

Section 2

With your teacher's help, decide which commodities you would like to produce.

If you choose INDOOR PLANTS, design a chart with the following categories and complete it as you carry out the project.

Name of Plant
Size of Pot Used
Seeding Instruction
Dates Fertilized
Transplanting Date

If you choose OUTDOOR PLANTS, design a chart with the following categories and complete it as you carry out the project

Name of Plant
Dates Fertilized
Seeding Instructions
Date of Maturity
Germination Date

As you carry out this project, keep a record of expenses. They will probably include:

1. seed cost
2. cost of growing medium
3. fertilizer cost
4. price of pots.

If you choose to RAISE ANIMALS, design a chart with the following categories and complete it as you carry out the project.

Name of Animal
Dates for Cleaning Enclosure
Food Required
Dates Exercised
Frequency of Feeding

As you raise the animals, keep a record of the expenses. They will probably include:

1. initial cost of animals
2. food costs
3. cleaning costs
4. veterinary charges.

AGR1030 Production Basics

Section 3

1. Calculate the costs for producing your plant or animal.
2. Calculate how much you will have to charge for each plant or animal in order to cover costs.
3. Find out how much professionals charge for similar plants or animals.
4. If appropriate, sell your commodity.

Section 4

The purpose of this section is to research and present certain aspects of a career involving plant or animal production. This information may be obtained from Alberta Agriculture, industries and businesses that are involved in these fields, and from career-related computer programs, government publications and periodicals. Your presentation should describe the nature of work usually performed, where it is done, and the skills you need for this type of work.

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AGRICULTURE

SAMPLE STUDENT LEARNING GUIDE

AGR2060 Land/Turf Management 1 (Maintenance Practices)

AGR2060 Landscape/Turf Management 1 (Maintenance Practices)

WHY TAKE THIS MODULE?

Successful landscape maintenance depends on the safe use of equipment and a basic knowledge of landscape plant materials. This module will give you experience with the tools and equipment used to maintain a landscape and the basic requirements of plant material in the landscape. Skills will be developed by providing practical on-site landscape services. You will also learn about lawn installation techniques.

WHAT DO YOU NEED TO KNOW BEFORE YOU START?

Prerequisite: AGR1070: Basic Landscape/Turf Care

AGR2060 Landscape/Turf Management 1 (Maintenance Practices)

WHAT WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

Upon completion of this module you will be able to:

- identify plants suitable for use in Alberta landscapes
- perform routine maintenance and safety checks on equipment used in landscape practices
- demonstrate practical skills in installing and maintaining landscape plants and turfgrass
- explain techniques used to cost landscape and turfgrass services
- demonstrate basic competencies.

WHEN SHOULD YOU WORK BE DONE?

Your teacher will give you a timeline for completing tasks and assignments within this module.

You may also wish to use a time-management planning chart to preplan the work that needs to be done in this module. Plan how you will use your class time as well as extra time needed to complete the assignments in this module.

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AGR2060 Landscape/Turf Management 1 (Maintenance Practices)

HOW WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE
You must first demonstrate **all** of the competencies required for this module. When you have done this, your percentage mark for the module will be determined as follows:	
• Practical	50%
• Theory	40%
• Work ethic	10%

WHICH RESOURCES MAY YOU USE?

- *Ornamental Horticultural Principles and Practices* (Ingels)
- University of Alberta Home Gardening Course (John Harapiak)
- *Alberta Horticulture Guide* (Alberta Agriculture)
- *The Lawn Expert* (Dr. D.G. Hessayon)
- *The Tree and Shrub Expert* (Dr. D.G. Hessayon)
- *The Bedding Plant Expert* (Dr. D.G. Hessayon)

AGR2060 Landscape/Turf Management 1 (Maintenance Practices)

ACTIVITIES/WORKSHEETS

Before beginning any practical work in this module, set up a number of pages in a logbook. The logbook pages are provided. Horticulturists in most areas keep daily records of activities and you will be required to fill in a space in the logbook for each activity that you complete.

- Power Machines
  - Obtain the owner's manuals from the power machines you will be using. Read the manuals and use the information to fill in the "Maintenance Equipment Information Chart."
  - Observe a demonstration of the use of the machine and make a check in the chart indicating that you have seen the demonstration.
  - Complete the "Lawn Maintenance Hand Tools Chart."
- Turf Maintenance
  - Complete the worksheets on mowing, watering, trimming and edging.
  - While working on the maintenance worksheets or after completing them, practise using the machines you researched to provide basic maintenance for the lawns either around the school or for a private residence. Include mowing, trimming, edging, weed removal, sweeping and raking. You should provide the service through at least two mowings.
  - If you provide the service to a private residence, have the resident fill out a "Service Sheet" for you outlining what work was done and on what dates.
  - Have your use of power machines evaluated. You must be able to demonstrate proper and safe use of a mower, power edger and power trimmer. Any other machines that you may have learned may also be evaluated at this time.
  - Observe a demonstration of a drop spreader and/or a broadcast spreader.
  - Complete the questions on lawn fertilizers.
  - Complete the questions and activities on lawn weeds. To do the lawn weeds chart you may be assigned an areas around the school or a residential area.
  - Provide basic maintenance requirements as necessary to a lawn area, including manual weed removal, removal of leaves and debris, application or fertilizer, watering, re-edging planting beds and use of hand trimmers in areas where power trimmers may be too damaging. The practice of these tasks will require you to use a number of hand tools you researched. You should be able to choose the correct tools necessary.

AGR2060 Landscape/Turf Management 1 (Maintenance Practices)

- Lawn Establishment
    - View the sections of the *Growing Beautiful Lawns* video dealing with site preparation, seeding, and sodding, and answer the questions on lawn establishment. Complete the small calculation activity.
    - Write the lawn maintenance quiz.
- Landscape Tools
    - Complete the landscape tools information page. Note that pruning tools will be added to this information.
- Landscape Plants
    - Using the references provided, research the following four types of landscape plants: annuals, perennials, trees, shrubs and ground covers. For each type give a definition, tell how it is used in a landscape and give at least three examples. You may present your information in chart form, as information sheets or any other manner that neatly displays the material.
    - Research and complete the plant identification assignment. You may do this all at once or a bit at a time, but you must complete the plant ID and write an identification quiz to complete this module. Plants are suggested with the assignment, but your instructor may choose other plants depending on what is available to you.
- Landscape Maintenance
    - Complete the pruning tools chart.
    - Complete the information on time to prune, parts of the tree and shrub as well as corrective pruning techniques.
    - After observing a demonstration of corrective pruning techniques for trees and shrubs, practise these techniques on plantings at the school or at a residential site.
    - Complete a pruning evaluation.
    - Use your references to research information on seasonal requirements of annual and perennial plantings. Research for the season you are in. This information should include preparation techniques such as cultivating and weeding, soil amending, planting or plant removal and general care of plantings including watering and fertilizing. This assignment should be in conjunction with a planting bed that you are working on and may be presented in chart form, report form, or any other appropriate method of communicating the information.
    - Provide the appropriate seasonal maintenance practices to annual and/or perennial planting at your school and/or a private residence. Choose a small area as your time may be limited.
    - Write the landscape quiz.

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AGRICULTURE

SAMPLE STUDENT LEARNING GUIDE

AGR3080 Floral Design 2
(Creative Design & Display)

AGR3080 Floral Design 2 (Creative Design & Display)

WHY TAKE THIS MODULE?

The floristry industry is an interesting and creative field that offers a wide range of both artistic and business opportunities. This module will explore the industry of floristry and build on the basic skills acquired in AGR2080: Floral Design 1. In this module you will use design principles and skills to create different styles of floral arrangements. Uses of flowers for different occasions will be an underlying focus and the production of wedding flowers will also be incorporated.

Note: *This module can be taken at any time of the year but production of seasonal-type items should be coordinated with the calendar if you plan to market and sell the items.*

WHAT DO YOU NEED TO KNOW BEFORE YOU START?

Prerequisite: AGR2080: Floral Design 1 (Projects for All Occasions)

AGR3080 Floral Design 2 (Creative Design & Display)

WHAT WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

Upon completion of this module you will be able to:

- identify and explain the cultural requirements of cut flowers, foliage and interior plants
- construct fresh, dried and/or artificial floral arrangements for special occasions
- calculate the cost and selling price of floral products and services
- demonstrate techniques used to promote products and services within the floral industry
- demonstrate basic competencies.

WHEN SHOULD YOU WORK BE DONE?

Your teacher will give you a timeline for completing tasks and assignments within this module.

You may also wish to use a time-management planning chart to preplan the work that needs to be done in this module. Plan how you will use your class time as well as extra time needed to complete the assignments in this module.

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AGR3080 Floral Design 2 (Creative Design & Display)

HOW WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE
You must first demonstrate **all** of the competencies required for this module. When you have done this, your percentage mark for the module will be determined as follows:	
• Practical	50%
• Theory	40%
• Work Ethic	10%

WHICH RESOURCE MAY YOU USE?

- *Ornamental Horticulture Principles and Practices* (Ingels)
- *Home Floral Design* (The John Henry Co.)
- *Flowers Canada Accreditation Manual Level I* (Flowers Canada)
- *The Houseplant Expert* (Dr. D.G. Hessayon)
- *Florist Review* (periodical)

AGR3080 Floral Design 2 (Creative Design & Display)

ACTIVITIES/WORKSHEETS

1 The Floristry Industry

1.1 Using your references, research and perform the following activities related to the floristry industry:
- create a chart that shows the top 10 flower-producing countries with the flowers they produce
- give reasons why cut flower production has grown dramatically in developing countries and give two examples of countries where this has happened
- using the Yellow Pages, find the names of your local wholesale outlets. If possible, visit a wholesale organization.

1.2 Create a chart that shows the major differences between a wholesale operation and a retail florist shop. **Note:** You may use some of the information gathered about florist shops from AGR2080: Floral Design 1.

2. Identification

2.1 Complete the flower and plant identification assignment. You will require a number of copies of flower and plant identification pages. You should be able to recognize the specimens on-site and know the main features of the specimen. Be prepared to write an identification quiz at the end of the assignment.

You may do this assignment all at once or as part of activities throughout the module.

3. Flowering Plants and Foliage Plants

3.1 Use the *Houseplant Expert* and the information provided to research the basic care of these plants. Complete the questions in the package provided.

3.2 Care for a group of interior plants by applying moisture, fertilizer and pest control as necessary for a minimum of two weeks. You may care for a group of plants in the school or use plants in your home. If you use a group of plants in your home, be prepared to list the plants and/or provide a picture. Keep a record of your maintenance activities in your logbook.

4. Design Principles

4.1 Research the design principles of rhythm and harmony, depth and line, and texture and focal point. These principles are in addition to the ones used in Floral Design 1. For each principle, tell how it is achieved in floral design and give an example in the form of a sketch. **Note:** You may demonstrate these principles using one sketch that shows all of them.

AGR3080 Floral Design 2 (Creative Design & Display)

5. Design Skills

After viewing a demonstration and filling out a design plan-page, complete the following designs:

- horizontal table arrangement with candle — should be made to fit a specific season
- choose two types of triangular arrangements. Create both types using the same materials for comparison
- hand-tied bouquet. This should be free standing. This skill will take time and practice. Students can use twigs or sticks to practise the technique before using floral material
- presentation bouquet. Discuss its merits and uses
- cascade bouquet. Most popular type of bouquet. Often over-used. Discuss possible alternatives
- complete one European-style, showing parallelism, cushion or vegetative style. This project should be carefully presented ahead of time and will require approval of your instructor.

6. Costs

Obtain a form used by a local flower shop for calculating costs of arrangements and/or design your own to fit the needs of your class. Remember to include the following items when calculating costs:

- flower and foliage materials (you will need the price per stem)
- hard goods prices, including containers, foam, wrapping, bows
- materials such as glue, wire, floral tape, and pins are usually added into the price as part of the mark-up. You will want to establish a constant amount
- labour will not be counted as much in the classroom as it would be in a flower shop, but you should note how long each arrangement takes and use this as a guide for establishing a labour cost
- overhead is not an issue in the classroom, but would be calculated as part of the mark-up in a flower shop
- price of delivery and GST should also be part of your calculation.

Once you have a form that addresses your needs, calculate the cost and possible price for the items you create in this module.

K. ACKNOWLEDGEMENTS

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Nancy Foulds
Lin Hallett
Dianne Hohnstein
Cori May
Joanne Medisky
Pauline Taylor
Catherine White
Marcie Whitecotton-Carroll
Esther Yong